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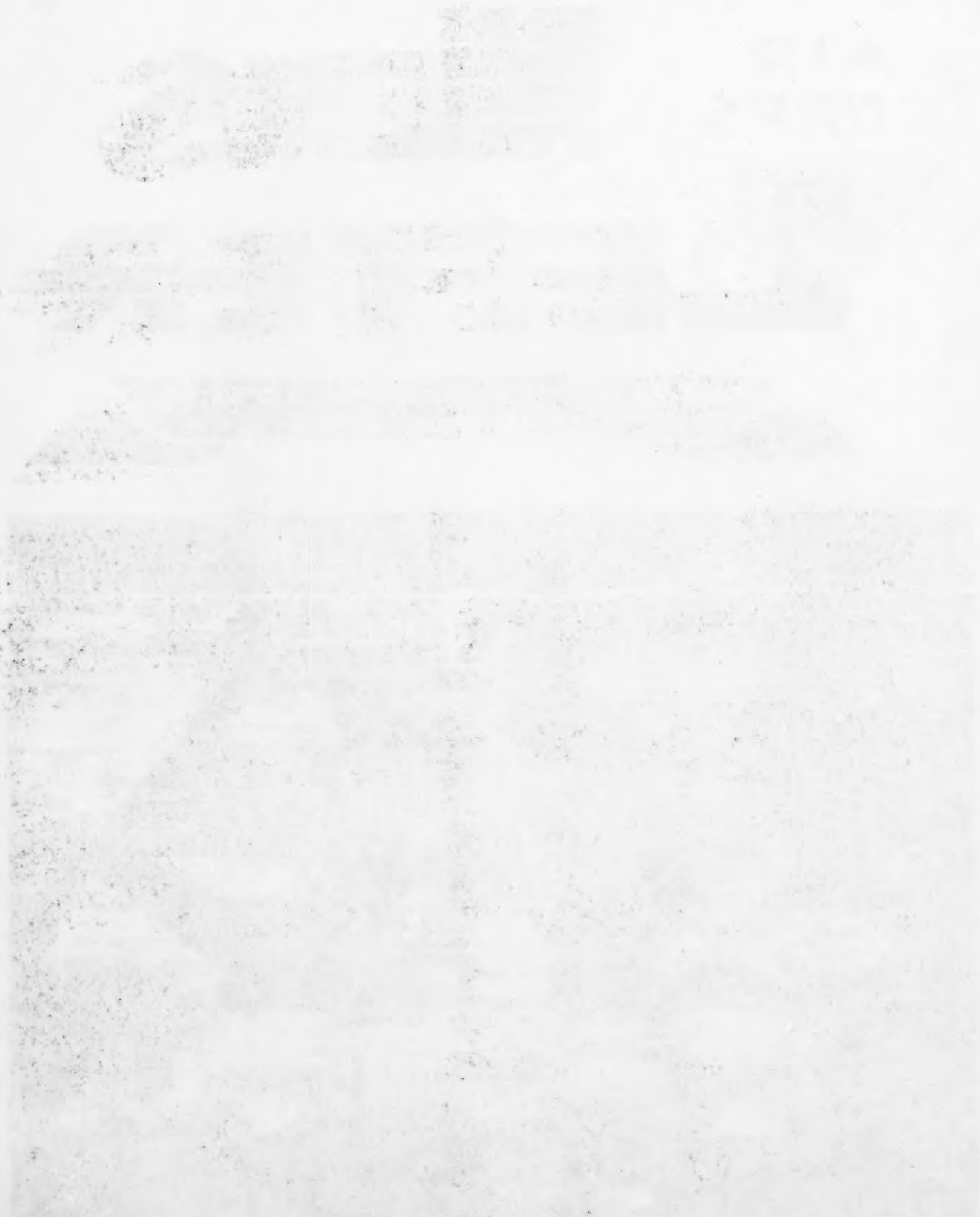
AIR CORPS NEWS LETTER

Issued by the Chief of the Air Corps
Washington, D. C.

VOL. XIX SEPTEMBER 1, 1936 NO. 17



VOL. XIX **Air Corps News Letter** NO. 17

Information Division
Air Corps

September 1, 1936

Munitions Building
Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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KNOCK-TESTING OF FUELS

By Captain F. D. Klein, Air Corps,
Materiel Division, Wright Field

ANTI-KNOCK value is probably the most important single property of aircraft engine fuel, since it directly limits the allowable engine output. Anti-knock value is normally expressed in terms of "Octane Number." The Octane Number of a fuel is the percentage of iso-octane in a mixture of iso-octane and normal heptane, which mixture has exactly the same anti-knock properties as the fuel in question. Iso-octane possesses unusually good anti-knock properties, whereas normal heptane is one of the worst knocking fuels. Therefore, the higher the Octane Number of a fuel the better is its anti-knock value and the more closely it approaches iso-octane in this respect. The Air Corps now specifies fuel of a minimum anti-knock value of 65 Octane for training type engines, and 92 Octane for tactical type engines, and in addition is procuring 100 Octane fuel at the present time for use at Barksdale, Hamilton and Selfridge Fields.

In accordance with the above definition of anti-knock values, 100 Octane fuel is equal in knocking properties to pure iso-octane. Although it now contains about 45 per cent of commercial iso-octane, it can be produced without the use of any iso-octane.

In conducting knock tests, a small single-cylinder engine designed specifically for fuel testing is used. All engine conditions, such as speed, jacket temperature, air-fuel ratio, etc., are carefully maintained constant at their specified values. To determine whether a sample of fuel conforms with Air Corps requirements for 92 Octane fuel, the engine is first operated at a standardized degree of knock with a reference fuel known to be exactly equal in anti-knock properties to a mixture of 92 per cent iso-octane and 8 percent normal heptane, octane and heptane themselves not being used for routine tests since they each cost $18.00 per gallon in their pure state.

The degree of knock is indicated by a potentiometer, which shows the temperature of a thermocouple inserted into the combustion chamber, this temperature rising with increased intensity of knock. After operating the engine with this reference fuel for several minutes, until conditions become stabilized, the fuel to the carburetor is shut off and the fuel in question, which has been placed in a second chamber, is quickly turned on. Without changing any other conditions, the engine is then operated for several more minutes, until conditions again become stabilized, and the reading of the potentiometer is recorded. If the fuel in question is better than the 92 Octane reference fuel, the potentiometer will indicate a lower temperature, since the knock intensity will be lower. Conversely, if the fuel in question is poorer than the reference fuel, the potentiometer will indicate a higher temperature and the fuel will be rejected.

By a similar process of comparing fuels in the engine, it is possible to determine the exact Octane Number of any fuel, or to find the amount of tetraethyl lead required to give any desired Octane Number.

The Materiel Division conducts knock tests of fuels submitted periodically by all stations to insure that the specified quality is being maintained. It also conducts tests of fuels submitted by some of the contractors to determine the amount of tetraethyl lead required to make the fuel conform with Air Corps anti-knock standards. Other samples are tested from time to time, in cooperation with other laboratories, to determine how closely the knock ratings can be reproduced in the various laboratories throughout the country.

In addition to these routine tests of fuels, the Division is continuously conducting experimental tests for the development of better fuels and improved methods of knock test. A large part of this work is closely coordinated with the Navy Department, National Advisory Committee for Aeronautics, Bureau of Standards, and commercial organizations, in order to make as rapid progress as possible.

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Lt. Col. George H. Brett, A.C., was appointed a wing commander in the Air Corps with the temporary rank of Brigadier General from August 20, 1936, under Act of Congress of June 16, 1936.

V-7091, A.C.

IMPROVED TRAINING METHODS IN HAWAII

The 5th Composite Group at Luke Field, T.H., begins the new training year with prospects for greatly increased opportunities for broader training activities than at any time heretofore. This is made possible by the completion of a landing mat and the installation of a modern field lighting system. In addition, the Group finds itself in the process of being equipped with modern aircraft. In the past, not having airplanes of a type which can maintain altitude on one motor, inter-island and cross-water flying has been rigidly curtailed for the sake of safety. Since the new Bombers can not only maintain altitude but can climb on one engine, prospects for training missions which will include flights to the outlying islands are greatly improved.

Graduates of the local navigation schools, in particular, are looking forward to opportunities to practice their art by flights to the other islands and interception problems involving approaching vessels. Plans for high altitude bombing practice have made necessary the abandonment of the old Ahua Point range, and the range, equipped with observation towers, will shortly be in operation at Waimanalo.

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"WEATHER HOPS" BY SCOTT FIELD PILOTS

During the two years, July 1, 1934, to June 30, 1936, Scott Field officers and enlisted pilots made a total of 588 "weather hops" for the Weather Bureau, U.S. Department of Agriculture. During the first year period, 302 flights were made, with 63 missed; and during the second year 286 flights were made and 80 missed. The average percentage for flights made during the two years is 80.

Four different airplanes were used of the O-19 and BT-2 types. One plane was lost when Captain Raphael Baez ran out of fuel in a fog and was forced to "bail out" near Peoria, Ill. There was one forced landing away from Scott Field, because of fog, but the plane was safely returned the next day.

Although the average altitude of the flights was 18,000 feet above sea level, two flights, one by Private Arnold T. Johnson and the other by 2nd Lieut. Paul H. Meng, were made above the 21,000 foot level. Scott Field's altitude is 444 feet above sea level.

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WAR OPERATIONS AT POST FIELD

At this writing Post Field, Fort Sill, Okla., is invaded by the Division Air Service of the Colorado National Guard. War-torn Fort Sill, the scene of countless simulated battles, reacts again in the throes of this latest conflict. The activity is manifest to a marked degree from dawn until noon, when silence prevails, almost instantly, until another dawn.

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THE P-6A IS NO MORE

"As far as we know," says the News Letter Correspondent from the Fairfield, Ohio, Air Depot, "the last P-6A finished its career when it landed wrong side up in a small field at Fernandina, Florida. Private T.S. Davis, piloting the relic, was enroute to Jacksonville, Florida, when forced to land about twenty miles north of his destination. Although not as well known as some of the older types, it had its merits, although its passing does not cause many regrets. However, it had one thing in its favor - it was warm in the winter."

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TIMING DEVICE ON SPEED COURSE

The News Letter Correspondent from the Fairfield Air Depot, Patterson Field, Ohio, states that it is contemplated installing an electrical timing device on the Speed Course located on the westerly side of the flying field. When completed, small towers, approximately 50 feet high, will be located at each end of the course. Notice to Pilots will be issued when the project is further advanced.

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HAWAIIAN AIRMEN AT KILAUEA MILITARY CAMP

Following the rigorous campaign conducted during the recent Hawaiian Department Maneuvers, in which the 5th Composite Group, Luke Field, at various times took the part of the enemy as well as the defending air forces, a group of fourteen war-weary pilots, including Lieut. Col. Asa N. Duncan, took off on July 9th for 14 days' detached service at the Kilauea Military Camp, on the "Big Island." The officers and men going to camp traveled by air. Wives, sweethearts and others were not so fortunate and were compelled to undertake the voyage on the "General Royal T. Frank." Reports from the camp depict the horrors of a terrible voyage with mountainous seas. A number of the ladies, unwilling or unable to face the hardships of a return voyage by water, have reserved space on the Inter-Island Airways planes.

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Flight A, 1st Transport Squadron, Patterson Field, Fairfield, Ohio, was quite busy freighting during the month of July. In a total of 17 freight trips, 12,655 miles were flown, and the total amount of freight carried aggregated 42,377 pounds.

NEW CRASH TRUCK AT SCOTT FIELD

A new "crash type 100" fire truck recently received at Scott Field, Belleville, Ill., will shortly be placed into service. It was designed especially for extinguishing liquid (gasoline and oil) and electrical fires. The new truck will be especially useful at an aircraft crash or other emergency which may occur at a distance from a water supply, as it has a 500-gallon water tank.

This 2½-ton fire truck is equipped with American-La France equipment and has ten wheels to afford more certain traction on muddy fields. It is known as a triple combination apparatus, the name being derived from the fact that it has three separate hose lines which can be used singly or all at the same time. Each hose is coiled on a reel and is connected at its base end to its particular fire-fighting agent. The three agents used with these hose are water, carbon dioxide and foamite.

The truck is especially useful for extinguishing fires which are at a distance from a water supply. The water storage tank of 500-gallon capacity is unusually large. If water is pumped from it at the maximum rate of 135 gallons a minute with force enough to throw the stream 70 feet, the supply will last almost four minutes. But four minutes is usually time enough to get a minor fire under control and to give the other fire apparatus time to make the necessary preparations.

Water is not sufficiently effective for liquid and electrical fires. Therefore the truck is equipped with other extinguishing agents to take care of any kind of fire. For a liquid fire of burning oil or gasoline, foamite is particularly effective. The truck carries 550 pounds of fine, gray foamite powder sealed in large cans. A foamite generator is mounted on the side of the truck. The generator receives water directly from the water pump, allowing the water to suck foamite powder into it as it rushes through the generator and out through the hose. Foamite put on a fire quickly forms a "soap sud" kind of coating that floats on the burning liquid and smothers the flames by excluding the oxygen in the air. A 2½-inch hose, 150 feet in length, is used only with foamite.

For fighting large electrical fires, carbon dioxide in liquid form is used. This chemical is stored in four 50-pound tanks under high pressure. These tanks are connected, two in a series, to a valve with one-inch hose attached. When the first two tanks are exhausted, the other two can be turned on for immediate use. Liquid carbon dioxide put on a fire causes a blanket of CO_2 to be formed, and oxidation, which we call "fire" to cease. Thus the fire is smothered out.

Another agent for extinguishing fire is carbon tetrachloride, available in portable hand extinguishers. This chemical is especially useful for small liquid and electrical fires. It generates carbon monoxide gas which smothers the flames.

The fire truck also has three other portable hand extinguishers, one foamite and two carbon dioxide, for use on small blazes.

Scott Field has other fire-fighting equipment, including three more fire engines, three hand-drawn chemical carts and five hand-drawn carts. The chemical and the hose carts are stationed at advantageous points on the field as auxiliary units. There is also a large number of hand extinguishers located in the various buildings.

The new "crash" truck will be stationed near the airplane hangars while flying operations are being carried on, according to the Air Corps safety requirement.

Scott Field sometimes has fires, but due to the efficiency of the fire department and the alertness of the guard and the military personnel in general, these few fires have been extinguished immediately after their start.

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ARTILLERY OFFICERS DROP BOMBS

The 23rd Bombardment Squadron, Luke Field, T.H., has been conducting a course for contact officers from the Coast Artillery Corps. The Artillerymen have been given considerable air work and were fortunate enough to find places in the formation which recently flew to Hilo and return. They have been getting the bomber's viewpoint by dropping bombs and firing aerial machine guns. When the course is completed they will have had an average of ten hours in the air.

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SERGEANT JOHANNSEN BACK AT SCOTT FIELD

Master Sergeant Walter Johannsen, who recently transferred back to Scott Field, from Kelly Field, Texas, has been placed in charge of the lighter-than-air gas plant. Sergeant Johannsen entered the lighter-than-air branch of the Aviation Section, Signal Corps, at Fort Omaha, Nebraska, in 1917, and served throughout the war at the front with the 4th Balloon Company. He was stationed at Scott Field for six years from 1922 until 1928. Once more a member of the Ninth Airship Squadron, he will fill the vacancy created by the retirement of Master Sergeant Herbert J. Bertram on June 30th.

REORGANIZATION OF THE ARMY AIR CORPS

On August 12, 1936, the War Department issued instructions governing the reorganization of the Army Air Corps within the continental limits of the United States incident to the reorganization of the General Headquarters Air Force.

Air Corps activities listed under the jurisdiction of the Chief of the Air Corps are as follows:

1. Office, Chief of the Air Corps, Washington, D.C.
2. Materiel Division, Wright Field, Ohio.
   - Flight B, 1st Transport Squadron, Wright Field.
   - Fairfield Air Depot, Patterson Field, O.
   - 1st Transport Squadron, less Flight B, Patterson Field, O.
   - Middletown Air Depot, Olmstead Field, Pa.
   - 2d Transport Sq., Olmstead Field, Pa.
   - San Antonio Air Depot, Duncan Field, Tex.
   - 3d Transport Sq., Duncan Field, Texas.
   - Rockwell Air Depot, Rockwell Field, Calif.
   - 4th Transport Sq. " " "
   - Scott Field Air Depot, Scott Field, Ill.
   - Air Corps Engineering School, Wright Field, Ohio.
3. Air Corps Technical School; Hq. and Hq. Sq., Technical School; 10th Air Base Sq.; 1st School Sq., and 2nd School Sq., Chanute Field, Ill.
4. Air Corps Training Center; Headquarters; Hq. and Hq. Sq., Primary Flying School; 11th Air Base Sq.; 46th, 47th, 52nd and 53rd School Squadrons; 20th Photo Section, Randolph Field, Texas.
   - Hq. and Hq. Sq., Advanced Flying Sch.; 12th Air Base Sq.; 61st, 62nd, 63rd and 64th School Squadrons, and 22nd Photo Section, Kelly Field, Texas.
5. Air Corps Tactical School; Hq. and Hq. Sq., Tactical School; 13th Air Base Sq.; 91st School Sq.; Air Corps Board, 4th Photo Section, Maxwell Field, Ala.
6. Bolling Field; Base Hq. and 14th Air Base Sq.; 1st Staff Sq., and 2nd Staff Sq., District of Columbia.

Activities under General Headquarters Air Force:

Headquarters and Headquarters Squadron, Langley Field, Va.

1st Wing: Hq. and Hq. Sq., 1st Wing; Base Hq. and 4th Air Base Sq., March Field, Calif.
- 17th Attack Group, Hq. and Hq. Sq.; 34th, 73rd and 95th Attack Sq., March Field.
- 19th Bombardment Group, Hq. and Hq. Sq.; 30th and 32d Bomb. Sq., March Field.
- 23rd Photo Sec.; 38th Reconnaissance Sq.; Cadet Detachment, March Field, Calif.
- Base Hq. and 5th Air Base Sq., Hamilton Field, Calif.
- 7th Bombardment Group; Hq. and Hq. Sq.; 9th, 11th and 31st Bomb. Sq., Hamilton Field.
- 88th Reconnaissance Sq.; Cadet Detachment, Hamilton Field, Calif.

2nd Wing: Hq. and Hq. Sq., 2nd Wing; Base Hq. and 1st Air Base Sq., Langley Field, Va.
- 2nd Bombardment Group; Hq. and Hq. Sq., 20th, 49th and 96th Bomb. Sq., Langley Field, Va.
- 8th Pursuit Group; Hq. and Hq. Sq.; 33rd, 35th and 36th Pursuit Sq., Langley Field.
- 37th Attack Sq.; 2d Photo Sec., 21st Reconnaissance Sq., Cadet Detachment, Langley Field, Va.
- Flt. A - 16th Obs. Sq. (C & A) (III CA) (See Note).
- Base Hq. and 2d Air Base Sq., Mitchel Field, New York.
- 9th Bombardment Group, Hq. and Hq. Sq.; 1st, 5th and 99 Bomb. Sq., Mitchel Field, N.Y.
- 8th Photo Section; 18th Reconnaissance Sq.; Cadet Detachment, Mitchel Field, N.Y.
- 14th Photo Section (II CA) (See Note);
- 97th Observation Sq. (II CA) (See Note); Mitchel Field, New York.
- Base Hq. and 3d Air Base Sq., Selfridge Field, Mich.
- 1st Pursuit Group, 17th, 27th and 94th Pursuit Sq., Selfridge Field, Mich.
- Cadet Detachment, Selfridge Field, Mich.

3rd Wing:
- Hq. and Hq. Sq., 3d Wing, Barksdale Field, La.
- Base Sq. & 6th Air Base Sq., " " "
- 3rd Attack Group, Hq. and Hq. Sq., 8th, 13th and 90th Attack Sq., Barksdale Field, La.
- 20th Pursuit Group, Hq. and Hq. Sq.; 55th, 77th and 79th Pursuit Sq., Barksdale Field.
- 5th Photo Section; Cadet Detachment, Barksdale Field, La.

Note: The following units located at stations under the command of the Commanding General, GHQ Air Force, will be under the control of the respective Corps Area Commanders for the purpose of tactical training and employment:

Commanding General, 2nd Corps Area:
- 97th Observation Sq., Mitchel Field, N.Y.
- 14th Photo Section, Mitchel Field, N.Y.

Commanding General, 3rd Corps Area:
- Flight A, 16th Observation Sq. (C & A) Langley Field, Va.

Air Corps Units Assigned to Corps Areas

- Base Hq. and 7th Air Base Sq., 15th Observation Sq., 21st Photo Sec., Hq. 21st Airship Group, 9th Airship Sq., Scott Field, Ill.
- Base Hq. & 8th Air Base Sq.; 12th Observation Group, Hq. and Hq. Sq., 12th and 22nd Obs. Sq.; 1st Photo Section, Brooks Field, Texas.
- Base Hq. and 9th Air Base Sq.; 19th Airship Squadron, Moffett Field, Calif.
- 91st Obs. Sq. (Corps and Army); 15th Photo Section, Fort Lewis, Wash.
- Flight C, 16th Obs. Sq. (Corps and Army); 2nd Balloon Squadron, Fort Bragg, N.C.
- 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th and 9th Corps Area Air Corps Detachments.

Air Corps Units assigned to War Department activities other than the Air Corps are:
- U.S.M.A., Air Corps Detachment.
- Fort Leavenworth Air Corps Detachment.
- Edgewood Arsenal Air Corps Detachment.
- Aberdeen Proving Ground Air Corps Detachment.
- Flt. B, 16th Obs. Sq., Fort Benning, Ga.
- Flt. D, 16th Obs. Sq., Fort Riley, Kansas.
- Flt. E, 16th Obs. Sq. Fort Sill, Oklahoma.
- 1st Balloon Squadron, Fort Sill, Oklahoma.

The Air Corps units and headquarters listed in the tables below will be reorganized and redesignated or constituted, effective September 1, 1936.

Table I

Units and Hqrs. reorganized and redesignated

Langley Field, Va.

Present Designation or Designations	New Designation
Hq. 2d Wing	Hq. & Hq.Sq., 2d Wing
(Hq., 2d Bomb. Group (59th Serv. Sq.	Hq. and Hq. Sq., 2nd Bomb. Group
(Hq. 8th Pur. Group (58th Serv. Sq.	Hq. and Hq. Sq. 8th Pursuit Group
21st Obs. Sq. L.R. Amphibian	21st Recon. Sq.

21st Obs. Sq. now active at Bolling Field made an active Recon. Sq. at Langley Field. No personnel to be transferred.

Mitchel Field, New York

(Hq. 9th Bomb. Group (61st Serv. Sq.	Hq. and Hq. Sq., 9th Bomb. Group
(18th Obs. Sq. LR Amph	18th Recon. Sq.

Redesignated a Recon Sq. and made active

Selfridge Field, Michigan

(Hq. 1st Pursuit Group (56th Serv. Sq. (57th Serv. Sq.	Hq. and Hq. Sq., 1st Pursuit Group

Hamilton Field, California

(Hq. 7th Bomb. Group (69th Serv. Sq. (70th Serv. Sq.	Hq. and Hq. Sq., 7th Bomb. Group
88th Obs. Sq.LR Amph	88th Recon. Sq.

March Field, California

Hq. 1st Wing	Hq. & Hq.Sq. 1st Wing
(Hq. 17th Attack Gp. (64th Serv. Sq.	Hq. and Hq. Sq., 17th Attack Group
(Hq. 19th Bomb. Gp. (76th Serv. Sq.	Hq. & Hq. Sq., 19th Bomb Gp.
38th Obs.Sq. LRLB	38th Recon. Sq.

Redesignated 38th Recon. Sq. and made active

Barksdale Field, Louisiana

Hq. 3d Wing	Hq. and Hq. Sq.,3d Wing
(Hq. 3d Attack Gp. (60th Serv. Sq.	Hq. and Hq. Sq. 3d Attack Group
(Hq. 20th Pur. Gp. (71st Serv. Sq.	Hq. and Hq. Sq. 20th Pursuit Group

Brooks Field, Texas

(Hq. 12th Obs. Gp. (62nd Serv. Sq.	Hq. & Hq. Sq., 12th Obs. Group

Chanute Field, Ill.

98th Serv. Sq.	10th Air Base Sq.

Randolph Field, Texas

67th Serv. Sq.	11th Air Base Sq.

Kelly Field, Texas

81st Serv. Sq.	12th Air Base Sq.

Maxwell Field, Alabama

(AC Tac.Sch. Det.* (AC Personnel only (84th Serv. Sq.	Hq. and Hq. Sq. A.C. Tactical School,13th Air Base Sq.

*Discontinued

Bolling Field, D.C.

100th Serv. Sq.	Base Hq. & 14th Air Base Squadron
Fort Lewis Air Corps Detachment	To be absorbed by the 91st Obs. Squadron.

Table II - Constituted Units

The units designated below have been constituted from the Station Complement at the posts indicated, the Station Complement being discontinued:

Base Hq. & 1st Air Base Sq. (2nd Group) Langley
Base Hq. & 2d Air Base Sq., Mitchel Field, N.Y.
Base Hq. & 3d Air Base Sq., Selfridge Field,Mich.
Base Hq. & 5th Air Base Sq.,Hamilton Fld.,Calif.
Base Hq. & 4th Air Base Sq., March Field,Calif.
Base Hq. & 6th Air Base Sq.(3 Gp.)Barksdale Fld
Base Hq. & 7th Air Base Sq., Scott Field, Ill.
Base Hq. & 8th Air Base Sq., Brooks Field,Texas
Base Hq. & 9th Air Base Sq., Moffett Field,Calif.

The units indicated below have been constituted from the activities noted:

Designation	Activity from which constituted
Chanute Field, Illinois	
Hq. & Hq. Sq. AC Tech School	A.C. Tech. Sch. Det. (Part)
1st School Squadron	Personnel at Chanute Fld.
2nd School Squadron	Personnel at Chanute Fld.
Randolph Field, Texas	
Hq. & Hq. Sq. AC Primary Flying School	A.C. Primary Flying Sch. Detachment (Part)
Kelly Field, Texas	
Hq. & Hq. Sq. A.C. Advanced Flying School	A.C. Adv. Flying School Det.(Part) 68th Serv.Sq.
61st School Squadron	Personnel at Kelly Field
62nd School Squadron	Personnel at Kelly Field
63rd School Squadron	Personnel at Kelly Field
64th School Squadron	Personnel at Kelly Field
Bolling Field, D.C.	
1st Staff Squadron	Personnel at Bolling Fld.
2nd Staff Squadron	Personnel at Bolling Fld.
Maxwell Field, Ala.	
91st School Squadron	Personnel at Maxwell Fld.

The Air Corps units and headquarters listed below retain the same designation as now authorized:

Table III

Langley Field, Va.:
Hq. and Hq. Sq. GHQ AF; 20th, 49th, 96th Bombardment Squadrons; 33rd, 35th, 36th Pursuit and 37th Attack Squadrons; 2nd Photo Section; Flt. A - 16th Obs. Sq. (C & A).

Mitchel Field, New York:
1st, 5th and 99th Bombardment Squadrons, 8th and 14th Photo Sections, 97th Observation Squadron.

Selfridge Field, Mich.:
17th, 27th and 94th Pursuit Squadrons.

Hamilton Field, Calif.:
9th, 11th and 31st Bombardment Squadrons.

March Field, Calif.:
34th, 73rd, 95th Attack Squadrons, 30th and 32nd Bombardment Sqdns., 23rd Photo Section.

Barksdale Field, La.:
8th, 13th and 90th Attack Squadrons; 55th, 77th and 79th Pursuit Squadrons, 5th Photo Sec.

Scott Field, Ill.:
15th Observation Squadron (C & A), 21st Photo Section, Hq. 21st Airship Group*, 9th Airship Squadron*, Scott Field Air Depot**.

*Removed from GHQ AF and placed under control of C.G., VI C.A.
**To function under control of Chief of the Air Corps.

Brooks Field, Texas:
12th and 22nd Obs. Sq. (C & A), 1st Photo Section.

Moffett Field, Calif.:
19th Airship Squadron.

Randolph Field, Texas:
Hq. A.C. Training Center, 46th, 47th, 52nd, 53rd School Squadrons, 20th Photo Section.

Maxwell Field, Alabama:
4th Photo Section; Air Corps Board.

Kelly Field, Texas:
22nd Photo Section.

Fort Lewis, Washington:
91st Observation Squadron.

Fort Sill, Oklahoma:
1st Balloon Squadron.

Fort Bragg, N.C.
2nd Balloon Squadron.

Air Corps Detachments - 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th and 9th Corps Areas.
Fort Leavenworth Air Corps Detachment
U.S.M.A. Air Corps Detachment.
Edgewood Arsenal Air Corps Detachment
Aberdeen Proving Ground Air Corps Detachment
Flt. B, 16th Obs. Sq., Fort Benning, Ga.
Flt. C, 16th Obs. Sq., Fort Bragg, N.C.
Flt. D, 16th Obs. Sq., Fort Riley, Kansas.
Flt. E, 16th Obs. Sq., Fort Sill, Oklahoma.

The Air Corps units listed below are rendered inactive and assigned as indicated:

Table IV.

Chanute Field, Ill.
48th Pursuit Squadron assigned to GHQ AF

Kelly Field, Texas:
41st Obs. Sq. LR Amph., redesignated 41st Recon. Sq., rendered inactive and assigned to GHQ AF.
39th Obs. Sq. (C & A) assigned to C.G., 8th Corps Area.
42nd Bomb., 40th Attack and 43rd Pursuit Squadrons assigned to GHQ Air Force.

Maxwell Field, Alabama:
86th Obs. Sq. (C & A) assigned to C.G., 4th Corps Area.
51st Attack, 87th Pursuit and 54th Bombardment Squadrons assigned to GHQ Air Force.

Bolling Field, D.C.:
14th Bomb. Sq., assigned to GHQ Air Force.

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During the month of July, the Engineering Department of the San Antonio Air Depot overhauled a total of 20 airplanes and 73 3ngines, and repaired 35 airplanes and 47 engines.

MORE IMPROVEMENTS AT BOLLING FIELD

On August 28th the Post Exchange was scheduled to dedicate to the service of Army personnel at Bolling Field, D.C., a new and modern gas station. It is conveniently located near the new Post Exchange, and its construction and facilities indicate another step toward the completion of the New Bolling Field. It has indoor facilities for washing and greasing cars, including a hydraulic rack, and plenty of space for tires and other accessories. A railroad siding will bring carloads of gasoline to within a few feet of the l rge underground t nks and do away with the old method of bringing in gas and oil by truck.

The elevation of the new field also overcomes the danger of flood when the Potomac goes over its banks. The new service station will be under the management of Master Sergeant "Uake" Holtzman, whose untiring efforts are making the Post Exchange, the Post Exchange Restaurant and the Service Station a real and more appreciated convenience to the personnel of the post and to visiting members of other posts.

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AN A-17 WITH RETRACTABLE LANDING GEAR

Major Carl Cover, Air Reserve, former Air Corps officer and now Vice President of the Douglas Aircraft Company, Santa Monica, Calif., en route by air from the Northrop Corporation's factory, Inglewood, Calif., to Scott Field, Ill., via Randolph Field, paid a brief visit to the San Antonio Air Depot on August 13th, conferring on certain modifications in O-43 airplanes. He was flying a new experimental Northrop plane to be offered to the Air Corps, which looks like an A-17 except that it has a retractable landing gear. The Depot pilots were very much interested in viewing it.

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FAIRFIELD NEEDS SOME OF POST FIELD'S WEATHER

Announcing that work on the new swimming pool at Patterson Field, Fairfield, Ohio, is progressing very nicely, the News Letter Correspondent expresses doubt if any except the hardy souls will be able to indulge in swimming this season. He states that even in mid-summer it requires considerable fortitude to dive in a newly filled pool, as the tap water at that station is seldom warmer than 52 degrees Fahrenheit.

The News Letter Correspondent at Fort Sill, Oklahoma, states that Post Field, stripped of the major portion of its personnel by the absence of the 1st Balloon Squadron, is being run by a skeleton crew comprised of the Flight E personnel. With "Old Sol" setting new high temperature records every day, he says that the heat bids fair to make the figure of speech - "Skeletonized Personnel" - an actuality, for 115 deg. in the shade on a plain where the only shade is in a hole in the ground is the new proud record.

Maybe the Fairfield swimming pool would be much in demand at the Oklahoma station.

2ND BOMB. GROUP IN SECOND ARMY MANEUVERS

Participation in the Second Army Maneuvers was the outstanding event on the activities calendar of the 2nd Bombardment Group, Langley Field, Va., for the month of August.

Eighteen planes of this Group left Langley Field on Saturday morning, Aug. 1st, on a non-stop flight to Chanute Field, Rantoul, Ill., to attack the mythical enemy concentrated there. Led by Lieut. Colonel Charles B. Oldfield, the initial leg was precisely executed, and, after a brief aerial review, the echelons landed for lunch and the servicing of aircraft. Later in the day, all participating units continued on to Selfridge Field, where they again passed in review and then landed for the night.

All personnel enjoyed a day of rest on Sunday, but at noon on Monday things were again astir as preparations were made for the flight to Fort Knox, Ky. Augmented by the 1st Pursuit Group from Selfridge Field and the 13th Attack Squadron from Barksdale Field, La., the 2nd Bombardment Group participated in the spectacular aerial concentration over Fort Knox, returning immediately afterward to Patterson Field, Fairfield, Ohio, for the night.

On Tuesday morning, the Group returned to its base at Langley Field after a brief, but very enjoyable, inning of "war games."

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PURSUITERS RETURN FROM FIELD EXERCISES

The 36th Pursuit Squadron returned to Langley Field following very successful field and aerial gunnery exercises at Virginia Beach during the period July 22nd to August 12th.

The exercises consisted of moving the Squadron to the advanced airdrome by air and motor transportation; establishing a camp in the field; performing daily gunnery missions on tow targets; refueling and maintenance of airplanes; and returning the organization to Langley Field.

The camp site was ideally situated at the Virginia National Guard Airport, about 2½ miles from Virginia Beach, where there was an excellent gunnery range. The biggest percentage of the firing was performed above 10,000 feet, in accordance with the current Training Program. Lieut. W.H. Gist was the Deadeye Dick of the Squadron during the Maneuvers. The close proximity to Virginia Beach offered fine recreation facilities for all concerned after regular duty hours.

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Second Lieuts. Herbert H. Hoover, Harry W. Markey and Lawrence M. Thomas, Air Res., Mitchel Field, N.Y., are continued on active duty until July 3, 1939.

RESERVE OFFICERS TRAIN AT MOFFETT FIELD

Captain George E. Henry, Air Corps Unit Instructor and Commanding Officer of the Air Corps Detachment, Municipal Airport, Oakland, Calif., reported on August 1st for duty at Moffett Field, Calif., in connection with two 14-day active duty training periods for Reserve Officers of the Second Reserve District, 9th Corps Area.

On August 2nd, ten men from the Air Corps Detachment were sent to Moffett Field to take care of the airplanes and equipment to be used during the training period, August 2nd to 29th, inclusive.

The first period, August 2nd to 15th, was devoted to the training of twelve Reserve Officers from the 316th Observation Squadron and four Reserve Officers from the 381st Service Squadron, attached, under the command of Major Frank A. Flynn, Air Reserve.

The flying equipment consisted of two O-25C, two O-19B and seven PT-3A airplanes. The schedule consisted of individual training, check flights, formation flights, aerial gunnery, photography, dismounted pistol practice, instrument flying, radio missions and ground training. The News Letter Correspondent is of the belief that at the end of this period all officers were satisfied with the equipment available and the ideal conditions for this type of training afforded at Moffett Field.

The second period, August 16th to 29th, was conducted for eleven Reserve Officers from the 367th Observation Squadron and four Reserve Officers attached, under the command of Major John C. Gray, Air Reserve. The equipment was the same as for the first period, and the schedule was repeated.

In addition to the heavier-than-air training, all Reserve Officers were afforded the opportunity to make observation flights in the Moffett Field airship. This was an innovation, indeed, for most of the personnel at the camp who were able to take advantage of this additional experience.

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LANGLEY ATTACKERS IN 2ND ARMY MANEUVERS

Captain Ned Schramm, Commanding Officer of the 37th Attack Squadron, Langley Field, Va., led a formation of four A-8 Attack planes to Chanute and Bowman Fields, where from August 6th to 8th the personnel participated in the Second Army Maneuvers. Upon returning to Langley Field, three of the airplanes, with Lieut. Stuart G. McLennan as flight leader, departed for Fort Benning, Ga., where the airmen cooperated with other troops. Master Sergeant Nero, Staff Sergeants Byerley and Gott accompanied this flight as mechanics.

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NIGHT AERIAL ARTILLERY ADJUSTMENT

The 316th Field Artillery, Fort Bragg, N.C., recently conducted a most interesting problem in night artillery firing, employing aerial observation as the sole means of adjustment. In this experiment the 155 mm. G.P.F. gun and the 240 mm. howitzer were used.

The aviators were informed as to the general location of the target, a white panel, 6 x 6 yards, placed flat on the ground at a range of around 10,000 yards from the battery positions. The aerial observer located this target at night and transmitted its coordinates to the artillery battalion command post by radio. The target was located with such accuracy that the greatest error of the firing batteries on the first shot was a three hundred yard range error made by the battery firing the G.P.F. All rounds fired would have been effective on target assumed - a concentration of hostile tanks in an area of some 300 yards square.

Although there was a full moon on the night of the problem, conditions were not the best because the atmosphere was hazy, and from time to time heavy clouds covered the moon. It was found that the white target could be seen better when the moon was obscured by a cloud. The aerial adjustment was considered to be practically as good at night as by day and was so effective that Battery "D", 36th Field Artillery, commanded by Captain Dan B. Floyd, F.A., secured a direct target hit. As a result of this test it was concluded that night aerial observation is practicable. If the target can be located and the initial adjustment made by the light of star shells or flares dropped from another airplane it should be as feasible as is night aerial bombing.

The entire credit for the initiation of the experiment in night artillery firing, using aerial observation, belongs to Lieut. Colonel Charles M. Busbee, Field Artillery, commanding the 36th Field Artillery. Captain Dan B. Floyd was in command of Battery "D," 36th Field Artillery, 240 mm. howitzers, and 1st Lieut. John D.F. Phillips commanded Battery "C," 36th Field Artillery, 155 mm. G.P.F. guns. The aerial observation was performed by Major E.P. Gaines, Air Corps, pilot, and 1st Lieut. Eugene H. Rice, Air Corps, observer.

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AIR CORPS OFFICERS ATTENDING WAR COLLEGE

Ten Air Corps officers are members of the 1936-37 Class at the Army War College, viz: Lieut. Colonels Ralph P. Cousins, Willis H. Hale, Clinton W. Howard, Majors Carl W. Connell, Muir S. Fairchild, William E. Farthing, Romeyn B. Hough, Jr., Arthur W. Vanaman, Ralph H. Wooten and Capt. Charles E. Thomas, Jr.

RADIOING TO THE PHILIPPINES

The News Letter Correspondent from Clark Field, Pampanga, P.I., announces that an amateur radio station has been set up at that post by Lieut. W.M. Canterbury, Air Corps, and adds:

"For the benefit of those desiring to communicate with friends at Clark Field or Fort Stotsenburg and for amateurs desiring to make contact the following information is given: The call letters are K A I C F. Frequency, 7150 K.C. Daily schedule is maintained at 0830 Greenwich Civil Time. Due to low power, however, Lieut. Canterbury recommends that messages be sent thru K A I H R, the army amateur radio control net of the P.I., allowing constant contact with the U.S. Persons not having the address of a nearby amateur station can have messages sent without charge by mailing them to the Army Amateur Radio Station, care of the Corps Area Signal Officer."

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RESERVE OFFICERS TRAIN AT LANGLEY FIELD

Twenty-one Reserve Officers reported at Langley Field, Va., on July 19th for two weeks' active duty. Seventeen of these officers were assigned to the 20th Bombardment Squadron for training, while the remaining four were assigned to the 8th Pursuit Group. An average of seventeen hours' flying time was given each pilot, along with several lectures covering ground training subjects. All but two pilots checked out in the B-10B type airplanes, and the training was carried out without any casualties or damage to equipment.

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AIRMEN ATTENDING ARMY INDUSTRIAL COLLEGE

Nine Air Corps officers are members of the 1936-37 Class at the Army Industrial College, Washington, D.C., namely: Majors Harrison W. Flickinger, Alonzo M. Drake, Alfred J. Lyon, Russell L. Maughan, John I. Moore, Max F. Schneider, Myron R. Wood, Captains Edmund C. Langmead and Richard H. Magee.

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35TH PURSUITERS COMPLETE AERIAL GUNNERY

The 35th Pursuit Squadron returned to its home station, Langley Field, Va., from Virginia Beach, on August 5th, following the participation of personnel in aerial gunnery on tow targets. All pilots fired the record course in this particular event, and gunnery practice on ground targets is now being held to continue the qualifications.

"We hope to render, upon the completion of gunnery practice, a report of 100% qualification, all EXPERT AERIAL GUNNERS," is the commend of the News Letter Correspondent.

SEVENTH BOMBARDMENT GROUP COMPLETES TRAINING FOR F.Y. 1935-1936

A varied amount of training was engaged in by the 7th Bombardment Group, Hamilton Field, Calif., during the Fiscal Year 1936, involving maneuvers and exercises which incorporated problems of tactics, technique and logistics; operations of the Group incident thereto away from its home base, and training of personnel in the technique of bombing, gunnery and navigation.

Particular emphasis was placed in developing members of combat crews to that point wherein they could perform adequately the duties to which they were assigned. This Group has increased its efficiency and benefitted immeasurably by the training performed. Based upon the ground work which has been laid down during the past training year, the Group will continue vigorously to stress all training which will enable it to approach more closely those standards which are demanded of an efficient Air Corps combat unit.

During the training year, the following maneuvers and exercises were engaged in by this Group:

San Joaquin Exercises:

In these exercises, conducted November 4 to 17, 1935, the Group moved to individual squadron airdromes, located at Merced, Visalia and Coalinga, in conjunction with the concentration of other units of the 1st Wing to other bases in the San Joaquin Valley. Supplies and equipment necessary for the maintenance of the units were moved into the field. Logistical experience was gained in concentrating all units of the Group on one airdrome, moving them to dispersed airdromes and supplying and loading bombs at one main and three dispersed airdromes. The tactical operations involved missions of the Group in bombing and machine gunnery against targets at Muroc Lake Air Corps Camp. In these operations the Group flew approximately 500 miles per day.

Experience in command and staff control was gained, particularly with reference to issuance of orders and handling of reports. All methods of transmission of orders were employed. Orders were received from Wing Headquarters, ordinarily by teletype. They were transmitted to the squadrons by radio or by airplane messenger. Particular stress was placed on delivering to all units orders sufficiently in advance so that for each mission careful planning and preparation could be made by the subordinate units.

Florida GHQ Maneuvers:

In these exercises, conducted from December 2 to 15, 1935, the personnel and airplanes of the 19th and 7th Bombardment Groups were consolidated. All staff work and planning was accomplished well in advance of the date of departure of this Group for March Field, and the control at the outset and throughout the exercises was satisfactory from the Group standpoint.

Invaluable experience was gained in moving the Group as a unit by air from March Field to Vero Beach in 21 hours. The experience gained by the Group in operating from airdromes of limited dimensions, in conducting flights to the limit of range of the airplanes, in navigation, radio control and formation flying contributed to increasing combat efficiency in the organization. Upon clearing Maxwell Field on the return flight, all officers were afforded opportunity of individual navigation, further augmenting their experience.

Muroc Lake Exercises:

These exercises, March 9th to 20th, 1936, inclusive, were devoted entirely to individual and formation bombing, employing the smaller practice bombs, 300-lb. demolition bombs and concrete bombs, varying in sizes from 600 to 2,000 lbs., manufactured at Muroc Lake under the direction of the Wing Ordnance Officer.

The movement of personnel and supplies to Muroc was accomplished by air and motor transportation. Thirty-nine 300-lb. demolition bombs, together with components, were moved from Hamilton Field to Muroc by air.

Experience was gained in unit and individual high altitude operations, involving the use of oxygen for all members of combat crews; in logistics in handling and loading the 600, 1100 and 2000-lb. bombs; in establishing bomb dumps with bombs dispersed over an area as would be necessary in wartime operations. Further experience was gained in taking off and climbing to altitude with full load of the heavy bombs. The exercises contributed to efficiency in tactics and technique; experience in command and staff control, and to increasing the efficiency of the combat teams with respect to performing bombardment missions.

31st Bombardment Squadron at Medford, Oregon:

These exercises were conducted August 17 to 24, 1935, inclusive. The 70th Service Squadron established and maintained camp, transported all supplies, transported bombs from the railhead to the airplanes, loaded ammunition and furnished 1st and 2nd Echelon maintenance for the 31st Bombardment Squadron.

The purpose of this maneuver was to obtain data on personnel, operations, maintenance, handling and loading of munitions, servicing, etc.

Valuable data was obtained in complying with the above mentioned requirements, and valuable experience was given to all officers and enlisted men who participated in the above exercises.

Bombing Activities.

An orderly program of rudimentary and advanced instruction in bombing was required, together with actual bombing practice. The ground instruction consisted of an elementary course in bomb sight operation, in conjunction with eight hours' training om the bomb trainer, progressing to a complete advanced course in the theory and operation of the bomb sight and allied armament equipment, such as bomb racks, bombs, bomb components, etc. The advanced course consisted of 10 hours' ground school work for every pilot and observer assigned and attached to Bombardment squadrons at Hamilton Field and, in addition, 15 enlisted bombardiers.

This Group has a bombing target adjacent to the field in the shallows of San Pablo Bay. The use of this target is frequently limited by fog and low ceilings, especially in the winter months. Therefore, in order to carry out our extensive bombing operations and conduct the many required service tests and test bombing at all altitudes and speeds within the range of the Martin Bombers, the Mather Field bombing range was used in addition to the Hamilton Field range. A semi-permanent camp at Mather Field has been maintained and squadrons have been based thereat for the accomplishment of bombardment training.

Each squadron took its turn in camping at Mather Field while it completed training of assigned and attached personnel. While at Mather Field the units concentrated on bombing alone. Missions were conducted continuously, from early in the morning until late in the evening, of every day in camp. Under that program, one squadron dropped over 1100 bombs and completed practically all its old TR 440-40 bombing in less than 10 days. The other two squadrons, handicapped by the comparatively bad winter weather, took somewhat longer, but the daily average of bombs dropped was over 100 each day. All commissioned personnel of the Group and Station Complement completed the bombing requirements under the old TR 440-40.

Objectives assigned by Wing Training Directive (F.Y. 1936) were as follows:

1. Raise the bombing altitude.
2. Carry out problems in which long range flights and bombing are engaged in concurrently.
3. Salvo bombing at high altitude by single planes, elements, squadrons and group.
4. Training and practice in bombing from 1,000 to 5,000 feet.
5. Development in procedure and recommendations for equipment necessary to destroy targets (water and land) at altitudes below 1,000 feet.

All squadrons participated in these phases of bombing. A total of 1230 bombs were dropped from a high altitude. The results are considered satisfactory, considering the equipment. Probable errors are now being compiled on all bombing which will indicate the present efficiency of this Group, based upon its past experience.

Intermediate altitude bombing has also produced gratifying results. Upon the only occasion when the Group dropped demolition bombs, a squadron salvo of 15 bombs netted 13 direct hits.

Many missions involving long range problems have been completed. A general investigation of various methods of salvo bombing was instigated, showing that a trained bombardier could be depended on to deliver a very effective salvo when all bombs in the formation were dropped on signal of the leading bombardier. These missions also contributed valuable information on the pattern obtained from individual, flight, squadron, and group salvo, also train releases.

The 11th Bombardment Squadron was designated to drop 400 bombs allotted for conducting the service test of a new type bomb. Four teams were selected, using only the most proficient bombardiers. Approximately two-fifths of the bombs were dropped by salvo release and the same number by release in train. The balance were dropped individually to check pertinent ballistic charts.

In order to cover the speed range of the airplanes, teams were assigned to fly at various calibrated air speeds. The results were uniformly good. The salvo releases were all manual and gave greater dispersion than was expected. However, the train releases were affected by the bomb sight electrically, and produced very small impact errors.

Aerial Gunnery

Three squadrons of this Group completed all of their assigned and attached commissioned personnel and the enlisted gunners of their combat crews in the course prescribed by the tentative TR 440-40. The gunnery range off the Pacific Coast has been used for this purpose, but training was severely handicapped due to the prevalence of fogs in that place. In spite of this disadvantage, 96 members of this Group completed the required course, 86 qualifying as Expert, 5 as Sharpshooter and 5 as Marksman. The number of rounds of 30 cal. ammunition expended totalled 242,824.

Skeet Shooting

All combat personnel of the Group have participated in skeet shooting, expending 38,385 rounds of 12-gauge shotgun ammunition for this purpose. Skeet shooting constitutes a very important part of the training required to make an expert aerial gunner. The News Letter correspondent recommends that some form of standard commercial skeet gun be provided to take the place of the riot guns now used for this purpose.

High Altitude Missions of all Types.

Realizing that the greater part of future operations will be conducted at high altitudes, this Group has continually emphasized operations at altitudes requiring the use of oxygen. Of 278 missions conducted at high altitude, most were bombing operations requiring from one to two hours of oxygen, there being used 3,320 litres of liquid oxygen and 3,700 cubic feet of gaseous oxygen. Seventy-five officers, cadets and enlisted pilots have participated. Excellent and valuable training was adforded all combat personnel in the Bombardment squadrons in this high altitude work. Much discomfort was experienced on all of these missions. Pilots found that flying the precise and accurate courses necessary to efficient high altitude bombing, and at the same time using the microphone and sucking an oxygen tube was very fatiguing. The bombardier, too, found that manipulating the bomb sight and related controls called for much greater exertion than at low altitudes. Upon return to the ground, those participating in these flights became drowsy and lethargic, and fatigue appeared out of proportion to the time flown. However, as the flying personnel became more accustomed to and proficient at operating at high altitudes, the missions became less fatiguing.

Navigation Training

During the past training year, the 7th Bombardment Group trained a total of six officers in Dead Reckoning Navigation. The final mission of the course is the interception of a commercial vessel, approximately 200 miles at sea. These have been very successful and, it is believed, the interception of vessels at sea by the whole Group will be a matter of daily occurrence in the near future.

A number of difficulties have been encountered. The first of these has been lack of equipment, particularly suitable airplanes, draft sights and plotting facilities. The second has been the amount of time available to the personnel taking the course. Other duties, such as Wing and GHQ maneuvers, bombing, machine gunnery, squadron duties, etc., have interfered more than the lack of equipment. The equipment situation is gradually being overcome.

A radio station has been installed in the 88th Obs. (LR) Squadron, which stays in direct contact with airplanes while on navigation missions. This prevents interfering with the Group Station, which was necessary at the beginning of the navigation instruction given at Hamilton Field. Three amphibian airplanes have been assigned to this station and are being used for navigation training. At present, one Martin Bomber is completely equipped for dead reckoning navigation and has been used constantly to supplement the training done in the amphibians. Plotting boards and drafting machines have been built, and plotting facilities are now very satisfactory. A sufficient number of drift sights has been obtained to carry on training in the Navigation School, and it is hoped that in the near future, enough drift sights and other equipment will be made available to equip four airplanes in each squadron, with a complete set of navigation instruments.

Training in celestial navigation has been held in abeyance due to the experiments being performed by the 19th Bombardment Group at March Field. It is believed that new methods will probably be developed by the 19th Bombardment Group, which had for its primary missions the experimentation with, and development of, suitable methods for celestial navigation.

Service Tests Conducted by the Group.

During the Fiscal Year 1935-36, the Group has conducted 30 service tests required by the Materiel Division, Wright Field, Dayton, Ohio. Of this number, 20 have been completed to date and required reports forwarded. The flying time devoted either wholly or in part to conducting these tests totalled 2,716 hours.

Summary of Flying

A total of 17,513:50 hours pilot time has been flown by members of this Group. This is an average of 271:45 per pilot, including pilots of the Station Complement and those on Group Staff duty, who naturally do not fly as much as regular members of combat crews.

The average number of airplanes in commission daily was 23.81, out of an average of 30.18 airplanes at Hamilton Field.

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PURSUIT GROUP HEADQUARTERS MOVES INTO THE FIELD

A convoy of three 2½-ton trucks, two reconnaissance cars, and seven privately owned automobiles, comprising the first move of the 8th Pursuit Group Headquarters, GHQ Air Force, left Langley Field, Va., for camp at the National Guard Airport, Virginia Beach, Va., at 6:45 a.m., August 12th. The Air Echelon of two PB-2A's, one XP-6H and one P-12F took off from Langley Field at 9:00 a.m.

Pursuit Headquarters with additional attached personnel engaged for two weeks in Field Exercises, consisting of aerial and ground gunnery missions, using the new PB-2A airplanes.

With the flight crews busy servicing, inspecting and maintaining the airplanes, the office personnel were engaged in operating the Group in the same manner as when they are in garrison at Langley.

THE GHQ AIR FORCE

At the Final Critique of the Second Army Maneuvers at Camp Custer, Mich., on August 20th, Lieut. Colonel Follett Bradley, Acting Chief of Staff, GHQ Air Force, made substantially the following remarks:

Military aviation is divided into two main categories. In the first, wherein the mission is to collect information of the enemy, fighting is done only in self defense. In the second, the primary job is to fight.

The former consists of Observation aviation and balloons. One group, normally of three squadrons and 44 airplanes, is assigned to each field army, and one group to each corps. In addition, each corps has one balloon group. This assignment permits the allotment of one squadron of airplanes and one of balloons to each division, although they do not form integral parts of the division.

In the Second Army Maneuvers just completed, all aviation, like all the ground forces, was at greatly reduced strength, due to the fact that sufficient airplanes and personnel to meet the requirements are non-existent. To Blue was assigned two National Guard Observation squadrons, the 107th and 108th, and one regular balloon squadron. Red had but one flight of Observation airplanes - from the Regular Army and Organized Reserves.

I am informed that all of these units did splendid work and greatly assisted the commanders of the ground forces by furnishing them with a continuous flow of vital intelligence of the enemy. In addition, during those times when other communications were impeded, they were helpful in keeping the commanders informed of the location, disposition, and needs of their own units. This assistance was of particular importance on account of the activity of the Red mechanized force in cutting Blue's ground channels of communication.

One criticism of the operations of Observation aviation was noted by General Craig, Chief of Staff of the Army. In their zeal and eagerness to do their job in the best possible manner, they often flew so low in the fire fight as to subject themselves to needless danger of being shot down by rifle and machine gun fire.

I want to say a word for the "forgotten man" of aviation,- the observer. Little glamour attaches to his role, yet the length of time required to produce a fully trained competent observer is as great as that to train a pilot. He must know organization and tactics of large ground units. He must fly with any pilot to whom he is assigned; he is at a great disadvantage if anything goes wrong with the pilot or airplane; he works in cramped space often in extreme discomfort; he must keep one eye in the air against hostile Pursuit, and the other on the ground. His is a responsible and unenviable lot and he deserves a big hand.

Division, Corps and Army Commanders should exercise great care in the assignment of observation missions. The best criterion is to assign missions to it which cannot be performed by other agencies. Within its own field, no observation is as good as that of a ground observer using field glasses from a good O.P. Under favorable conditions balloons are excellent, if there is a sufficient degree of air superiority to permit them to keep station, for the adjustment of Corps and Army artillery fire. Airplanes with their trained crews are not easy to replace, and should be conserved to perform important missions which circumstances prevent other agencies from accomplishing. Functions assigned to Observation airplanes during these maneuvers, and quite properly, was the verification or disproof of specific items of important intelligence furnished by other agencies.

The GHQ Air Force comprises all units of Attack, Bombardment, and Pursuit Aviation stationed in continental United States. It also has a few Reconnaissance squadrons for its own purposes, and some transports. For this maneuver, only a few squadrons of the GHQ Air Force could be assigned. All Pursuit was Blue, and all Bombardment and Attack were Red. Had sufficient forces been available, all classes of combat aviation would, of course, have been assigned both to Red and Blue. The assignment adopted permitted Pursuit to perform its proper role of interception and attack of enemy striking aviation - Attack and Bombardment. Unfortunately, however, there was no opportunity afforded the mechanized force to operate in the face of opposition by its most potent and dangerous enemy - Attack Aviation. It is pertinent here to quote a despatch received day before yesterday by International News Service from their correspondent in Spain, -

> Mr. Knickerbocker: The Reds "made a daring drive with 200 motor trucks from Guadalajaro to Atienza, striving to cut off a rebel column ----, but the attempt met with disaster. Before the 200 trucks carrying around 2000 troops came into contact with the white forces, a squadron of White bombers (attack aviation) located them, and in a murderous attack with machine guns and bombs, sustained over several hours, destroyed the entire column. Returning again and again with fresh bombs and ammunition, the White war planes left not one Red truck intact, while the White pilots reported that they flew low enough to see the bodies

of the Reds expelled in fragments from their exploding trucks."

That despatch referred to real bombs, real bullets and real fragments of bodies and it happened just three days ago.

Another effective weapon of Attack Aviation is gas, and I am told that the excellent imitation concocted by Colonel Brackenbury is not unknown here at Camp Custer. Some attacks were ineffective, but others produced from 80% to 100% casualties on their target. Troops who experienced such attacks will not need to be impressed further with the need for devising effective means of defense against them.

Pursuit Aviation is designed and trained to intercept and destroy hostile aircraft in flight. In recent months new Pursuit tactics have been devised whereby the fire of many Pursuit airplanes can be concentrated at one time on the target, instead of placing reliance entirely on the World War tactics of successive diving attacks. However, the problem of interception of the enemy will always be present to plague Pursuit, and I think it is not unfair to say that any interception of an enemy bombardment or attack formation without the assistance of a ground intelligence net is pure luck. At night, in my opinion, no interception can be depended upon.

And now for Bombardment. I have purposely left this to the last, because we of the Air Corps feel that its present capacity and future development are such that it is destined to play a major part in any war. In these maneuvers, the participation of Bombardment was more to show its capabilities than to assess results. This was necessarily the case because the limitations of time and space did not permit the maneuver to be so drawn as to afford even partial scope to the employment of Bombardment Aviation.

Although we do not like to put it so bluntly, the war time mission of the soldier is to destroy. We train during the years of peace to destroy our enemy in war,- to destroy his soldiers, his property, his will to attack us. Our national policy is one of defense. Our geographical situation, with friendly neighbors north and south, and vast oceans east and west, is such that an enemy must cross those oceans in tremendous force to impose his will upon us. Although Bombardment Aviation in Europe may be an instrument of aggression, with us it is a powerful agency of defense. Bombardment Aviation can destroy nearly anything built by man. It can destroy ships easily, and an enemy must come to us in ships.

To indicate briefly the power of modern Bombardment, let me cite a few figures:

Last December the entire GHQ Air Force concentrated in Florida from points as far distant as California in less than 23 hours.

On more than one occasion during these maneuvers, bombardment aviation flew approximately 1000 miles non-stop, day and night, good weather and foul, and delivered a simulated attack at the appointed time.

Our navigators are so skillful that flights hundreds of miles to sea are of frequent occurrence. Regardless of the distance flown, we expect now an accuracy of about ten miles in over water navigation, and hope to improve on that.

The accuracy of our bombing is indicated by a demonstration held last week at Fort Benning, Georgia, in which a mean deviation of 4 mils (40 feet) was recorded from 10,000 feet. Good results have been obtainedin high altitude bombing, and training along this line is being stressed.

Deliveries will soon commence on a contract for 13 4-engined Bombardment airplanes which, carrying 2,000 pounds of high explosives, can deliver this load to a target 1500 miles from its base and return and, in addition, carry sufficient defensive armament to make any attacking force give considerable thought before engaging in combat. In addition, airplanes of this type can readily reinforce the aerial defense of Panama, Alaska or Hawaii, flying non-stop. Excluding other factors of superiority, these modern engines of war cost less initially, cost less to maintain, and require fewer combat and maintenance officers and men than the number of present Bombers required to carry an equivalent bomb load.

Bombardment Aviation is the backbone of every air force in the world today. No one can stop its development nor predict its ultimate achievement. We of the Air Corps often speak of independent air operations and are occasionally misunderstood in our use of the term. We refer to the unquestioned tactical independence of Bombardment Aviation from ground troops. Strategically, there is the greatest of interdependence under one commander,- the Chief of Staff in peace and the commander of the field forces in war. We are proud to be a member of the Army team, and we expect, should war come to this country, to acquit ourselves well of the responsibility which will inevitably be reposed in us.

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The 37th Attack Squadron, Langley Field,Va., received four of its allotment of A-17 planes, and two more are expected soon. They will replace the A-8's which, after a year of faithful service with the 37th, were ordered to other fields. The high spirit of the Squadron has been further heightened by the arrival of the new equipment.

BIOGRAPHIES

COLONEL JOHN H. HOWARD

Colonel John H. Howard, Air Corps, who entered the military service during the Spanish-American War, was born at Dayton, Ohio, March 2, 1879.

Enlisting in the Coast Artillery on April 27, 1918, he served as Private, Corporal and Sergeant, Battery "L," 7th Artillery, until his honorable discharge on October 11, 1898. Reenlisting on February 11, 1899, with the 6th Cavalry, he served as Private, Corporal, Sergeant and First Sergeant of Troop M of that regiment. Following service in China with the 6th Cavalry in the Boxer Rebellion, from August, 1900, to May, 1901, he participated in the operations against the Philippine Insurrectos from May, 1901, to October, 1902.

Commissioned a Second Lieutenant of Cavalry, February 2, 1901, he was assigned to the 9th Cavalry, and was a member of that regiment until November, 1914. He was promoted to 1st Lieutenant, August 2, 1908, and graduated from the Mounted Service School, Fort Riley, Kansas, in 1910.

From November, 1914, to August, 1917, Colonel Howard was on recruiting duty at Fort Slocum, N.Y. He was promoted to Captain of Cavalry, July 1, 1916.

During the World War, he served with the 32nd Division as Adjutant, and overseas, until April, 1918, as Assistant Chief of Staff, G-1. He was then appointed to the General Staff, American Expeditionary Forces. He participated with the 32nd Division in the major operations in the Belfort Sector, Oise-Aisne, Aisne-Marne and Meuse-Argonne, receiving citations both from the Commander-in-Chief of the American Expeditionary Forces and from the Commander of the Tenth French Army for especially meritorious and conspicuous service. The French Government conferred upon him the Croix de Guerre with palm and made him a Chevalier of the Legion of Honor.

While in France, Colonel Howard attended the Command and General Staff College at Langres, and, following his graduation from this school, he served as Assistant Chief of Staff, G-1, 32nd Division, while it was assigned to the Bridge Head with the First and Second Divisions in Germany. Appointed Commander of the Port, Coblenz, Germany, and Assistant to G-4, Headquarters 3rd Army, Coblenz, Germany, he performed these duties from April to July, 1919. Upon his return to the United States in the latter part of July, he was detailed as an Inspector-Instructor, Texas National Guard, and he served in this capacity until September, 1920.

Detailed to the Air Service in October, 1920, Colonel Howard was sent to the Pilots' School at March Field, Riverside, Calif., for primary Flying training. This training completed March 25, 1921, he was transferred to the Air Service Observation School at Post Field, Fort Sill, Oklahoma, for advanced flying instruction. Upon the completion of his course of instruction at Post Field, he was rated "Airplane Pilot" effective October 14, 1921.

Colonel Howard's first regular assignment as an Air Corps officer was as Commanding Officer of Kelly Field, San Antonio, Texas, which duty he assumed on February 1, 1922. Relieved from this duty in July, 1924, to attend the Command and General Staff School at Fort Leavenworth, Kansas, he was assigned to duty, following his graduation from this School in July, 1925, as Air Officer of the Third Corps Area, Baltimore, Md.

From August 25, 1926, to August 2, 1929, he served as Air Officer of the Hawaiian Department, and during the course of this duty he drew up and perfected for the Air Corps plans for the Five-Year Expansion Program for the Hawaiian Department.

Following his relief from duty in the Hawaiian Department, Colonel Howard served as Commanding Officer of Mitchel Field, L.I., New York, and the 9th Observation Group, from September 5, 1929, to May 8, 1934. On June 5, 1934, he assumed his present duty as Commanding Officer of the San Antonio Air Depot, Duncan Field, Texas.

During the World War, Colonel Howard held the temporary rank of Major of Infantry, National Army, from August 19, 1917, to August 7, 1918, when he was promoted to Lieutenant-Colonel. He reverted to his regular rank, January 27, 1920. He was promoted to the regular rank of Major, July 1, 1920; to Lieut. Colonel, May 26, 1921, and to Colonel, November 1, 1932.

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COLONEL ARTHUR G. FISHER

Colonel Arthur G. Fisher, Air Corps, was born in Denton, Maryland, on November 24, 1877. He enlisted in the Regular Army, September 1, 1899, and served as a private and corporal, Troop H, 1st Cavalry, until April 29, 1901, when he was discharged to accept appointment as a second lieutenant of Cavalry.

Colonel Fisher was promoted to the rank of first lieutenant on April 6, 1908; to captain, July 1, 1916; to major (temporary) on August 5, 1917; to lieutenant colonel (temporary), July 30, 1918; and to colonel (temporary), October 26, 1918. He reverted to his permanent rank of captain on January 31, 1920; was promoted to Major, Regular Army, on July 1, 1920; to lieutenant colonel, April 23, 1921,

and to colonel, August 1, 1932.

Colonel Fisher joined the 14th Cavalry at Fort Leavenworth, Kansas, on May 20, 1901. Ordered to Fort Grant, Alaska, in July of that year, he served at that post until August 21, 1903, when he was ordered to the Philippines. He served with the 14th Cavalry at various stations in the Philippines to October 20, 1905, participating in an engagement with hostile Moros at Cotta Pang Pang on February 14, 1904, and at Laksamana Usap's Cotta on January 7, 1905. Returning to the United States with his regiment, he served at the Presidio of San Francisco to February 7, 1907, and at Boise Barracks, Idaho, to February 8, 1908, during part of which time, from July 6 to September 27, 1907, he attended the School of Musketry at the Presidio of Monterey, Calif. Returning to the Presidio of San Francisco, he served there until June 20, 1908, when he was transferred to Fort Myer, Va., for duty with the 13th Cavalry, remaining at that station until February 27,1909.

After another tour of duty in the Philippines, being stationed at Camp McGrath, he returned to the United States on February 12, 1911, and was again assigned to the 14th Cavalry, being stationed at Fort McDowell, Colorado in command of the 8th recruit company to February 13, 1913, when he was transferred with his regiment to Eagle Pass, Texas, serving on border patrol duty to May 12, 1914. He then served at various posts in Texas to December 31,1916, during part of which time, from May 30 to July 10, 1916, he participated in Colonel F.W. Sibley's Expedition into Mexico. He served with the 17th Cavalry at Douglas, Arizona, to July 30, 1917; and was Instructor, School of Fire, Fort Sill, Okla., to October 26, 1917, during which time he was graduated from the Field Artillery School. He then served with the 20th Cavalry at Fort Riley, Kansas, and Camp Logan, Texas, to November 10, 1917; and with the 307th Field Artillery at Camp Dix, N.J., to May 26, 1918.

Colonel Fisher sailed with the 307th Field Artillery to France, June 1,1918, and served as Brigade Adjutant, 153rd Field Artillery Brigade, to October 1, 1918; and as Commanding Officer, 307th Field Artillery, to April 20, 1919, participating in the St. Mihiel and Meuse-Argonne Offensives. He was in command of troops, Base Sector #9, Antwerp, Belgium, to August 2, 1919. When he returned to the United States on August 16, 1919, he was assigned to duty as Assistant District Military Inspector of Reserve Officers' Training Corps District, San Francisco, Calif., to November 6, 1919. He then served with the 13th Cavalry, Fort Clark, Texas, to January 1, 1920, and as Inspector-Instructor, Texas Cavalry, National Guard, at Dallas, Texas, to October 1, 1920.

Upon being detailed to the Air Service, Colonel Fisher was a student at the Balloon Observation School at Ross Field, Arcadia, Calif., from October 5, 1920,to April 12, 1921. He was rated "Balloon Observer" April 26, 1921. He next took a course of instruction at the Airship School at Langley Field, Va., following the completion of which he was awarded the rating of "Airship Pilot," effective August 13, 1921. Stationed at Langley Field until June 30, 1922, he performed successively the duties of Commanding Officer, Commanding Officer of Airship Troops, Commandant of the Airship School and Assistant Commandant of the Airship School.

Following duty at the Primary Flying School at Brooks Field, Texas, from July 6, 1922, to February 28, 1923, Colonel Fisher was assigned to undergo a course in rigid airship training at the Naval Air Station at Lakehurst, N.J., and he was on duty thereat until August 9,1924, when he returned to Langley Field for duty as student at the Air Service Tactical School. His graduation from this school in June, 1925, was followed by an additional year of duty as a student at the Command and General Staff School, Fort Leavenworth, Kansas.

Transferred to duty in the Panama Canal Zone, Colonel Fisher served on the Isthmus as Commanding Officer of France Field and the 6th Composite Group, and later as Department Air Officer and Commanding officer of the Panama Air Depot. His foreign service tour was followed by duty as a student at the Army War College, Washington, D.C., August,1929, to June, 1930. Upon graduation, he was assigned to duty in Texas, being Air Officer of the 8th Corps Area from August 16, 1930, to November 2, 1931, and Commanding Officer of the San Antonio Air Depot, Duncan Field, Texas, from November 3, 1931, to June 1, 1934.

Colonel Fisher's next duty assignment was in the Office of the Chief of the Air Corps, Washington, D.C., where he was Chief of the Plans Division from June 9, 1934, to June 11, 1935. He was then transferred to Maxwell Field, Montgomery, Ala., where he is Commanding Officer of the post and Commandant of the Air Corps Tactical School.

For gallantry in action against hostile Moros, in the Philippines in the engagements previously mentioned, Col. Fisher was awarded the Silver Star Citation with one Oak-Leaf Cluster.

In addition to the two lighter-than-air ratings, heretofore mentioned, Col. Fisher also holds the rating of "Airplane Observer," received September 22, 1925, following his completion of the special course in Observation at the Air Corps Advanced Flying School, Kelly Field, Texas.

O B I T U A R I E S

Fog, the arch enemy of airmen, was responsible for the death on August 21st of two Air Corps officers, Captain Harold Brand and 1st Lieut. Anthony E. Curcio. During the course of a night flight from Moffett Field, Calif., Lieut. Curcio, the pilot, ran into fog and high wind in the treacherous hills of Altamount Pass, near Livermore, Calif. The airplane crashed into a hillside, some 100 yards from the pass the airmen had evidently been blindly searching for.

Captain Brand, who entered the military service during the World War, was born at San Diego, Calif., April 13, 1897. He attended grammar school and high school at Coronado, Calif., and then took a university correspondence course. At the time of his enlistment on December 11, 1917, in the Aviation Section, Signal Corps, he was part owner of a weekly newspaper.

Following the completion of his ground school course at the School of Military Aeronautics, University of California, Berkeley, Calif., on March 23, 1918, he took flying training at Rockwell Field, Calif., and later at March Field, Calif., and upon passing the required tests he received the rating of Reserve Military Aviator, was commissioned a second lieutenant in the Aviation Section, Signal Corps, November 9, 1918, and assigned to active duty at March Field, where he was a flying instructor, in addition to his other duties.

Transferred to the Hawaiian Department in March, 1922, Captain Brand was stationed at Luke Field for a period of three years and, following his return to the mainland, was assigned to station at the Primary Flying School, Brooks Field, Texas. He was on duty with the 11th School Group as Supply Officer, and later was Assistant Stage Commander. In February, 1927, he was transferred to Dodd Field, Fort Sam Houston, Texas, where he was Supply Officer of the 12th Observation Squadron.

In May, 1929, Captain Brand was transferred to the Office of the Chief of the Air Corps, Washington, D.C., where he was assigned to the Information Division as Chief of the Intelligence Section. Ill health necessitated his relief from duty in Washington, and in August, 1931, he was transferred to Rockwell Field, where he remained until October, 1935, when the field was abandoned as a station for Air Corps troops. He was then assigned to station at Moffett Field, Calif., and was on duty at this new Air Corps field as Technical Inspector, Operations Officer and Intelligence Officer. In addition to his rating as Airplane Pilot, he was, on August 10, 1929, rated as Airplane Observer. A the time of his death, Captain Brand had exceeded the 3500-hour mark in total flying time.

Lieut. Curcio was born in New York City on November 18, 1907. After graduating from the United States Military Academy in 1930, he was detailed to the Air Corps, taking his primary flying training at March Field, Riverside, Calif., and his advanced training at Kelly Field, Texas. He specialized in Pursuit, and upon his graduation on October 10, 1931, from the Advanced Flying School, he was rated an Airplane Pilot and assigned to duty at March Field, serving as Personnel Adjutant of the 17th Pursuit Group.

A student at the California Institute of Technology, Pasadena, pursuing a course of instruction in meteorology, September, 1933, to June, 1934, Lieut. Curcio was then assigned to duty at Rockwell Field, Calif., and, upon the abandonment of that field by the Air Corps in October, 1935, he was transferred to Moffett Field, Calif.

The heartfelt sympathy of the Air Corps is extended to the bereaved families of the deceased officers.

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JOHN J. McSWAIN

In the death on August 6, 1936, of the Honorable John J. McSwain, of South Carolina, Chairman of the Military Affairs Committee of the House of Representatives, the nation lost a staunch advocate of adequate preparedness for National Defense.

Mr. McSwain was untiring in his efforts to formulate a policy of adequate defense, and it was largely his disregard for his own health in the discharge of the responsibilities of his office that aggravated his physical condition. He was a firm believer in the potentialities of air power, and in the last session of Congress sponsored legislation to increase the commissioned and enlisted strength of the Army and to enlarge the Air Corps.

Himself a Captain in France during the World War, commanding Company A of the 154th regiment of Infantry until after the Armistice was signed, Mr. McSwain took an intense interest in the Army and did most of his traveling by airplane in order to inspect the military posts in various parts of the country.

Last January, in sending New Year's greetings to the officers and men of the Air Corps, through the Air Corps News Letter, he stated:

"I do not fail to think of the officers and men in the armed services, such as the ground force of the Army, the Marine Corps, and the Coast Guard. But since the Air Corps is in fact 'our first line of defense,' and therefore must be instantly ready at all times to

perform its great mission of beating off and beating down any attempted invasion of our country, I confess an unusual interest in this new branch of the Service.

I have not suggested anywhere that other agencies and instrumentalities of defense may be discarded or neglected. Progress and improvement in the instrumentalities of warfare do not bring about substitutions for old agencies, but merely cause additions to them and thus a general increase in the number and kinds of weapons. But with an adequate and properly equipped and trained air force, coupled with our Navy and the Naval Air Force, we can relax somewhat as to land forces. Since our sole purpose in maintaining military establishments is to insure defense, we believe that the Air Corps and the Navy can so retard and hold back the initial stages of any possible invasion as to give us time to fill in the skeletonized organizations of the Regular Army and to recruit the National Guard up to war strength and to man the Organized Reserves with the unorganized militia, and to train these groups of land forces so that invasion will be prevented, and if not actually prevented, the invader may be promptly driven from our borders and punished as a warning for all time to all peoples."

Mr. McSwain was born in Laurens County, S.C., May 1, 1875. He graduated in 1897 from the South Carolina College, and began the practice of law at Greenville, S.C., in 1901. When war was declared against Germany, Mr. McSwain, then 42 years of age, entered the first training camp at Fort Oglethorpe, Ga. Upon completion of the course of instruction, he was commissioned a Captain in the National Army, and was assigned to active duty at Camp Beauregard, La. Following his honorable discharge from the Army in March, 1919, he returned to his law practice in Greenville. The following year he was elected to Congress, and thereafter was repeatedly reelected. He was appointed Chairman of the House Military Affairs Committee in 1932.

On the day of the funeral of Congressman McSwain, Lieut. Stuart G. McLennan led a flight of three A-17 Attack planes from Langley Field, Va., to Greenville, S.C., for the purpose of dropping flowers on the grave. Flying Cadets Eaking and Willoughby were the other two pilots, and the mechanics were Technical Sergeant Gossett, Staff Sergeants House and Caldwell.

In the masthead of each issue of "The Reserve Officer," a monthly publication, there appears this statement written by Mr. McSwain: "Let us pledge the Reserve Officers Association to nothing but unselfish, disinterested, patriotic efforts for the broad, forward-looking policies of defense."

DEATH OF THE SECRETARY OF WAR.

The War Department was advised of the death at Walter Reed General Hospital at 10:55 a.m., August 27, 1936, of the Honorable George H. Dern, Secretary of War. Mr. Dern's death came after several weeks' illness and resulted from cardiac complications, following a severe attack of influenza.

Mr. Dern contracted influenza last spring during an inspection of War Department activities in Florida. After a brief illness he apparently completely recovered from the attack and returned to duty in the War Department. However, he suffered a relapse about two months ago and has been in the hospital since that time.

Mr. Dern was born in Dodge County, Nebraska, September 8, 1872, the son of John and Elizabeth Dern. He was graduated from the Fremont (Neb.) Normal College in 1888 and attended the University of Nebraska in 1893 and 1894. He was a linesman and captain of the Nebraska football team which won the Missouri Valley championship. While at the University of Nebraska he was a cadet under Lieut. John J. Pershing, then professor of military science and tactics at that college.

After leaving college, Mr. Dern went to Utah where he became associated with his father in mining operations, subsequently becoming general manager of the Consolidated Mercur Gold Mines Company, owner of the largest gold mine of Utah. With Mr. Theodore C. Holt he was the inventor of the Holt-Dern roasting process for the reduction of refractory ores.

In 1914 Mr. Dern was elected to the Utah State Senate from Salt Lake County, serving in that body for eight years. During that time he was the author of a number of progressive measures which were enacted into law, including the Workmen's Compensation Act, Corrupt Practices Act, Mineral Leasing Act, Blue Sky Law and the Initiative and Referendum. During the World War he served as a member of the Utah State Council of National Defense.

Mr. Dern was elected Governor of Utah in 1924, receiving both the Democratic and Progressive nominations. Although Mr. Coolidge as the Republican nominee for President carried Utah by 30,000 votes, Mr. Dern was elected as a Democrat by 9,000. Four years later Mr. Dern was reelected, this time by a margin of 31,000, the largest majority ever given a candidate for governor in that State. At the same time Mr. Hoover as the Republican candidate for President carried Utah by 14,000.

While Governor of Utah, Mr. Dern served twice as Chairman of National Governors' Conference and declined re-election for a third term. From 1927 to 1933 he served as a member of the Executive Committee of that body. He was one

of the organizers of the Western Governors' Conference, serving as its chairman in 1931 and 1932. He was proposed by a number of western States as a candidate for the Democratic nomination for Vice-President at the Chicago convention in 1932, but declined to permit his name to be presented, and personally seconded the nomination of Mr.Garner.

Mr. Dern's second term as Governor of Utah expired January 2, 1933. He declined to become a candidate for a third time and also declined to be a candidate for United States Senator. On March 4, 1933, he became Secretary of War. Mr. Dern was a member of the Congregational Church. He was a 33rd degree Mason, a Knight Templar and a Shriner, a member and former director of the Salt Lake City Chamber of Commerce, also a member of the American Institute of Mining and Metallurgical Engineers, the Delta Tau Delta Fraternity, the University, Alta and Country Clubs of Salt Lake City, and the University and Army and Navy Clubs of Washington. He was an officer and director of a number of mining and metallurgical enterprises and commercial companies, including the Holt-Christensen Process Company, Pleasant Grove Canning Company, First National Bank of Salt Lake City, Mutual Creamery Company and the First Security Trust Company.

In 1899 Mr. Dern was married to Charlotte Brown of Fremont, Nebraska. Five children, Mrs. Mary Baxter, Miss Elizabeth Dern, Mr. William B. Dern and Mr. James G. Dern, of Washington, D.C., and Mr. John Dern, of Chicago, Ill., survive him in addition to his widow.

In a statement issued by the Hon. Harry H. Woodring, the Assistant Secretary of War, he said:

"In the death of Mr. Dern the nation has suffered an irreparable loss. His long and brilliant career as a member of the State Senate, as Governor of his State and as Secretary of War has been distinguished by the highest standard of public service. His passing is a great personal loss to me and to his associates of the War Department who have long cherished his friendship and affection."

Admiral William H. Standley, Acting Secretary of the Navy, sent the following message to the Acting Secretary of War:

"Upon behalf of myself and the entire naval establishment please accept our sincere condolences upon the loss of The Honorable George H. Dern, Secretary of War, which is keenly felt by your sister service."

General Malin Craig, Chief of Staff of the United States Army, issued the following statement:

"Members of the Army of all ranks are deeply grieved to learn of the passing of their beloved Chief. Secretary Dern was a true friend of the Army. He worked unceasingly in behalf of national defense, sacrificing his health to the welfare of the country. Much of the progress made by the army in the past three and a half years was due to his intelligence, understanding and his eager devotion to the public interest. He had the broad viewpoint, sound judgment and wide knowledge that proved invaluable in solving the problems of the War Department. To those of us who served with him the Secretary of War was more than a superior, he was an intimate friend who merited and held our deep affection."

Funeral services for Mr. Dern were held at 4:00 p.m., on Saturday, August 29th, at the Mt. Pleasant Congregational Church, Washington, D.C., with the Rev. Dr. Russell J. Clinchy officiating. The funeral party, escorted by the 2nd Squadron, 3rd Cavalry, and the 1st Battalion, 16th Field Artillery, then proceeded to the railroad station, where it was received by a Guard of Honor, consisting of a battalion of Infantry and a battalion of Engineers. The funeral party then left by special train for Salt Lake City, Utah. Upon arrival in Salt Lake City on Tuesday, September 1st, at 8:00 a.m., the body will lie in state at the State Capitol until 3:00 p.m. The funeral will be held from the Capitol at that hour, with the Rev. Dr. Elmer I. Goshen and the Rev. Dr. Jacob Trapp officiating. Interment will be in Mt. Olivet Cemetery, with full military and Masonic honors.

Included in the official party accompanying Mr. Dern's body to Salt Lake City were Hon. Homer S. Cummings, Attorney General of the United States; Hon. Daniel C. Roper, Secretary of Commerce; Hon. Harry H. Woodring, Acting Secretary of War; Admiral William H. Standley, Acting Secretary of the Navy; Hon. Edward F. McGrady, Acting Secretary of Labor, and General Malin Craig, Chief of Staff, United States Army.

The Hon. Cordell Hull, Secretary of State, was unable to accompany the party due to a specific request from the President that he remain in Washington as Acting Head of the Government.

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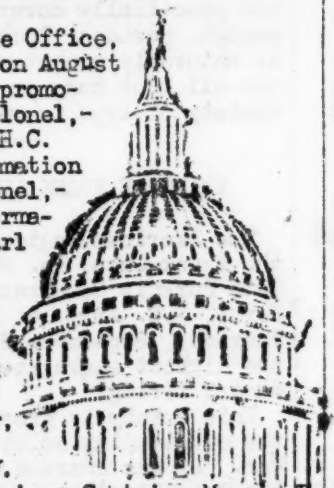
First Sergeant Herbert Cassetty, 24th Pursuit Squadron, Air Corps, Albrook Field, Panama Canal Zone, was placed on the retired list on August 31, 1936.

Staff Sergeant Lawrence Sweeting, 61st Service Squadron, GHQ Air Force, Mitchel Field, L.I., New York, was placed on the retired list August 31, 1936.

The active duty assignments of three second lieutenants of the Air Reserve were extended, as follows: Ben A.Mason, Jr., Luke Field, T.H., to Oct. 14, 1937; Theodore M.Melden,Jr., Mitchel Field, to July 3,1938, and David G. Desmond,Barksdale Field, to October 17, 1938.

WASHINGTON OFFICE NOTES



Officers on duty in the Office, Chief of the Air Corps, on August 26th received temporary promotions, as follows: To Colonel,- Lieut.-Colonel Harrison H.C. Richards, Chief of Information Division; to Lieut. Colonel,- Major Ross G. Hoyt, Information Division; Majors Carl W. Connell, Lynwood B. Jacobs, Supply Division.

Officers who recently returned from leaves of absence were Major David A. Myers, Medical Corps; Major Alfred W. Marriner, War Plans and Training Division; Major Edward V. Harbeck, Inspection Division; Captains Mervin E. Gross and Donald F. Stace, Supply Division.

Officers returning from temporary duty at other stations were Major Charles P. Prime, War Plans and Training Division; Captain Stewart W. Towle, Personnel Division.

Major Charles Y. Banfill, War Plans and Training Division, made a navigation flight to Key West, Fla.

Recent visitors to the Chief's Office during the course of navigation flights, or while en route to other stations, were: Lieut. Colonel Ralph H. Wooten, from Langley Field, for duty as student at the Army War College; Major Richard H. Magee, Maxwell Field, for duty as student at the Army Industrial College; Captain Roland Birnn, from Fort Leavenworth, Kansas, enroute to Maxwell Field for duty as instructor at the Tactical School; Major Harry A. Halverson, from Fort Leavenworth; Lieut. Colonel Edgar P. Sorenson from Wright Field, O.; Captain Ronald A. Hicks, Instructor, National Guard, Birmingham, Ala.; 1st Lieuts. Thomas S. Moorman, on leave from Mitchel Field, and Fay O. Dice from Maxwell Field.

Major Carl W. Connell departed for duty as student at the Army War College.

Captain R.V. Laughlin departed on August 24th on leave of absence.

Lieut. Colonel Robert L. Walsh departed Aug. 20th to inspect Air Corps Reserve activities in the west.

Captain Lawrence J. Carr dropped in to say 'Howdy' to his friends during the course of a flight from Maxwell Field.

Lieut. Colonel H.W. Flickinger, from the Fairfield Air Depot, dropped in to sign the book and greet his friends. He is attending the 1936-37 course at the Army Industrial College.

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Major General Oscar Westover, Chief of the Air Corps, visited Kelly Field, Texas, on August 20th, gave a short talk to the officers of the post, and answered any questions which the personnel asked. General Westover, flying an A-17 Attack plane, landed and stayed overnight at Randolph Field, Texas.

General Westover returned to Washington on August 27th.

TEMPORARY PROMOTION OF AIR CORPS OFFICERS

The War Department announced on August 26th that, in accordance with provisions of an Act of Congress, approved June 16, 1936, the President authorized the temporary promotion of the following officers of the Air Corps:

LIEUTENANT COLONEL TO COLONEL

Arnold N. Krogstad	Follett Bradley
Walter H. Frank	Shepler W.FitzGerald
Frank D. Lackland	Leslie MacDill
Harrison H.C. Richards	Lawrence S. Churchill
Ira A. Rader	Clarence L. Tinker
Douglas B. Netherwood	Martin F. Scanlon
Lewis H. Brereton	Byron Q. Jones
Hugh J. Knerr	Davenport Johnson
Eugene A. Lohman	Walter G. Kilner
Herbert A. Dargue	Henry W. Harms

MAJOR TO LIEUTENANT COLONEL

William O. Butler	Albert M. Guidera
John G. Colgan	James F. Doherty
Vernon L. Burge	Lynwood B. Jacobs
William B. Wright,Jr.	Frank W. Wright
Raymond E. O'Neill	Edgar P. Sorenson
Frederick I. Eglin	Robert Olds
Dudley B. Howard	Ross Gordon Hoyt
Floyd E. Galloway	William B. Mayer
Calvin Earl Giffin	Richard H. Ballard
Stephen J. Idzorek	Ralph H. Wooten
Harrison W.Flickinger	Harold M.McClelland
Carl William Connell	Wolcott P. Hayes
Thomas S. Voss	Edmund W. Hill
Thomas W. Hastey	Walter F. Kraus
Morris Berman	William E.Farthing
Walter Bender	

CAPTAIN TO MAJOR

Charles C. Chauncey	Frederick D. Lynch
Walter E. Richards	Thomas L. Gilbert
Homer B. Chandler	William W. Welsh
Carl W. Pyle	Joseph W. Benson
John M. McCulloch	Caleb V. Haynes
Charles W. Sullivan	John F. Whiteley
Melvin B. Asp	Harold A. Bartron
George C. McDonald	Guy L. McNeil
Peter Emanuel Skanse	Lewis S. Webster
Alfred E. Waller	Alfred L. Jewett
Malcolm N. Stewart	Louis C. Mallory
Odas Moon	Clarence P. Talbot
Arthur G. Liggett	Roy W. Camblin
Westside T. Larson	Cornelius J. Kenney
Newton Longfellow	Winfield S. Hamlin
Martinus Stenseth	Robert T. Zane
Rex K. Stoner	LeRoy A. Walthall
Bushrod Hoppin	Lucas V. Beau, Jr.
John M. Davies	Newman R.Laughinghouse
Lloyd Barnett	James M. Gillespie
James B. Carroll	Frederick vonH.Kimble
James Edward Duke,Jr.	William J. Hanlon
Charles W. Steinmetz	David R. Stinson
John A. Laird, Jr.	Armor S. Heffley
Wendell B. McCoy	Joseph T. Morris
Walter T. Meyer	Howard A. Craig
James D. Givens	William R. Sweeley
William C. Farnum	George A. McHenry,Jr.
Charles M. Cummings	Carlyle H. Ridenour
William Turnbull	Russell C. MacDonald
James A. Woodruff	Bennett E. Meyers
Lester J. Maitland	Paul H. Prentiss
Arthur I. Ennis	Robert S. Heald

Warren A. Maxwell	Levi L. Beery
Frederick M. Hopkins,Jr.	Carlton F. Bond
Leonard D. Weddington	John DeF. Barker
Paul E. Burrows	Warren R. Carter
George H. Brown	Thad V. Foster
Dale V. Gaffney	Harold A. McGinnis
Elmer D. Perrin	Harry A. Halverson
Edward M. Powers	Charles T. Skow
Richard H. Magee	Morton H. McKinnon
Kenneth B. Wolfe	Walter B. Hough
John V. Hart	William M. Lanagan
Henry H. Reily	George P. Tourtellot
Dayton D. Watson	Walter K. Burgess
Donald D. FitzGerald	Paul C. Wilkins
Austin W. Martenstein	George H. Beverley
Edwin B. Bobzien	Norman D. Brophy
John D. Corkille	

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NEW SKEET RANGE AT KELLY FIELD

The new skeet range at Kelly Field, Texas,is creating much interest and is giving the officers of the post an opportunity to compare skeet shooting with the more common trap shooting. The opinion is that it affords more practice in fast shooting and requires more ability than traps.

Captain Clyde K. Rich, Air Corps, has been placed in charge of the range and has organized five competitive teams of officers and cadets, not only for the practice but for the purpose of testing new equipment and determine the value of the training derived from fast shooting from all angles.

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VARIED ASSORTMENT OF PLANES AT BOLLING FIELD

Although Bolling Field has about 65 pilots assigned or attached for flying, it has no active tactical organization. Most of the pilots are on duty in the Office of the Chief of the Air Corps, and some are attending the Army War College and the Army Industrial College. They maintain their flying proficiency by coming to Bolling Field at intervals and making short cross-country flights or local practice flights.

To give these pilots every opportunity to fulfill missions called for by flying regulations, Bolling Field has a great variety of planes. There are approximately 38 planes assigned to this station. In that group are 14 different types, representing almost all types of flying equipment. One PT-3A is kept for practice and check flights for Reserve officers. Two Boeing P-12E's and one P-26A are available for Pursuit practice. A Fairchild C-8 is assigned for photographic work only,and is kept busy by the Photo Section. A Douglas C-29 Amphibian and a Curtiss Condor C-30 are used as transports along with the two Douglas C-34's assigned to the Office of the Secretary of War for special flights. Three BT-2B1's are kept busy in instrument flying training. For general practice and cross-country flights there are ten O-38B's, six O-38F's, six new Seversky BT-8's and one BT-9. The National Guard Bureau has one O-38D and one O-43A. The arrival of two new A-17A airplanes for the Chief of the Air Corps and the Assistant Chief of the Air Corps adds another type to the group and practically covers all phases of flying except, perhaps, Bombardment. Since Washington is naturally a center of activity, these planes are all kept busy on various missions, and the variety of type is much appreciated.

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AWARD OF FRANK LUKE, JR. MEMORIAL TROPHY

The American Legion of Arizona will present the Frank Luke, Jr. Memorial Trophy to the 79th Pursuit Squadron, General Headquarters Air Force, U.S. Army, at Phoenix, Arizona, on Thursday, September 3rd. The award is made for the highest aggregate score in annual gunnery record firing.

This Trophy is presented in honor of one of the outstanding aviation heroes of the World War. It was awarded annually since 1931 to the Pursuit pilot of the Air Corps stationed on the West Coast who made the highest gunnery score. The conditions of the award were changed this year to provide that the presentation should be made to the organization having the highest aggregate score. The winning squadron will fly in a score of planes from its station at Barksdale Field to Phoenix to receive the award.

It is entirely appropriate that this ceremony should be held during the month of September, because it was during the period September 12th to 29th, 1918, that 2nd Lieut. Frank Luke, Jr., wrote his name in blood across the sky of the western front by performing the aerial feats for which his heroic death on September 29, 1918, placed his name among the four Army Air Corps pilots, who participated in the World War, to be awarded the Congressional Medal of Honor. During this brief fortnight Luke's meteoric career was crowded with spectacular events.

On September 12, 1918, he shot down his first aircraft during the war, an observation balloon. The balloon was recognized, by experienced pilots, to be the most difficult of aerial targets, ringed about as it was by a wall of ascending bullets from antiaircraft machine guns. From this time until he met his death on September 29th, Luke accounted for 21 enemy aircraft, mostly balloons. His death, the story of which has been pieced together since the War, was most spectacular and heroic. One account reads as follows:

"After having first shot down three enemy balloons and two planes, he descended low over the ground and killed eleven of the enemy, either with hand bombs or machine gun bullets. While flying low, his plane was hit from the ground and he himself was apparently wounded.

He made a successful landing; got out of his plane and when the enemy called upon him to surrender replied by drawing his automatic and opening fire. Thus standing he continued to defend himself until killed."

The citation awarding him the Congressional Medal of Honor reads in part as follows:

"For conspicuous gallantry and intrepidity above and beyond the call of duty."

The detailed arrangements for the ceremony on September 3rd are being made by Mr. E.P.

TROFEO COLOMBIA
PRESENTADO POR LA AVIACION MILITAR COLOMBIANA
AL CMD DE LAS FUERZAS AEREAS MILITARES DE LOS
ESTADOS UNIDOS PARA JUGARSE ANUALMENTE EN
HONOR AL MERITO

COLOMBIA PRESENTS TROPHY TO AIR CORPS

During the GHQ Air Force Maneuvers in the vicinity of Miami, Florida, in December, 1935, Major Benjamin Mendez, one of the foremost flyers of the Colombian Army, presented a trophy to the GHQ Air Force in the name of the Republic of Colombia. Appreciation for the donation of this Trophy was made in a letter addressed to the Minister of War, Republic of Colombia.

This Trophy, a photographic reproduction of which appears on the opposite page, is of silver, except for the base, which is mahogany. It is approximately 16 inches in height. A silver plate attached to the base bears the following inscription:

TROFO COLOMBIA
PRESENTADO POR LA AVACION MILITAR
COLOMBIANA AL GHQ DE LAS FUERZAS
AEREAS MILITARES DE LOS ESTADOS
UNIDOS PARA JUGARSE ANUALMENTE EN
HONOR AL MERITO

In keeping with the intent of the donor, as expressed in the above inscription, and amplified by Major Mendez in making the presentation, it is proposed to award this Trophy annually to that group in the GHQ Air Force which has the lowest accident rate per 1,000 flying hours each training year, as determined by the Inspection Division, Office of the Chief of the Air Corps.

Formal recognition of the above described Trophy for the purpose outlined was given by the War Department on August 11, 1936.

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Award of Frank Luke, Jr. Memorial Trophy

(Continued from page 20)

McDowell, Department Adjutant of the American Legion, Department of Arizona. Participating in the ceremony for the Army will be five officers, six enlisted men, and two airplanes from the Headquarters, First Wing, GHQ Air Force, March Field, and the 79th Pursuit Squadron, the winning organization, consisting of twenty officers, fifteen enlisted men, eighteen Pursuit airplanes and one Transport airplane from Barksdale Field, La.

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RETIREMENT OF STAFF SERGEANT WILLIAM J. CREMERS

Upon the completion of over 30 years' active service, of which two years, two months and seven days were accredited double time for service in the Philippine Islands, Staff Sergeant William J. Cremers, 70th Service Squadron, Hamilton Field, Calif., was placed on the retired list of the U.S. Army, July 31, 1936.

Sergeant Cremers first enlisted in Troop A, 1st Cavalry, October 3, 1907, and served with this organization to October 26, 1913.

Reenlisting Nov. 13, 1913, he was furloughed to the reserve at Douglas, Arizona, as a Sergeant, Veterinary Corps, February 29, 1920, and was discharged to reenlist June 7, 1920. He served with the Medical Department as a Staff Sergeant at Letterman General Hospital until July, 1924, and in the 11th Medical Regiment, Haweiian Department, to March 15, 1926. He then served a three-year enlistment in the Quartermaster Corps, and reenlisting for the Air Corps on August 29, 1929, his service in that arm was continuous until the date of his retirement. He served at March Field, Calif., until his discharge from the 64th Service Squadron, August 18, 1932; reenlisted the following day, was transferred to Hamilton Field, Calif., with the 7th Bombardment Group, and served until his discharge from the 69th Service Squadron, August 18, 1935; reenlisted the following day, was transferred to the 70th Service Squadron, May 14, 1936, and served continuously with that organization as a Staff Sergeant.

His record was excellent, and he was congratulated by the Commanding Officer of Hamilton Field, upon the completion of a highly successful career. The good wishes of the entire command of Hamilton Field were extended to Sergeant Cremers upon his well deserved retirement.

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TC-11 AIRSHIP FLIES OVER KENTUCKY WAR MANEUVERS

CaptainsGeorge C. Cressey abd Gerald G. Johnston, pilots, made a flight recently in the TC-11 airship to Fort Knox, Ky., during the last few days of the Second Army Maneuvers in that region. Leaving Scott Field, Ill., at dawn, Capt. Cressey piloted the airship to the vicinity of Fort Knox by early afternoon. He cruised around an hour looking down upon the highways massed with Second Army trucks and marching troops. Thousands of trucks and automobiles of all kinds were moving at a 20-mile-per-hour pace despite traffic conditions.

There were ambulances, cargo trucks, kitchen trucks, passenger trucks, photo trucks, reconnaissance and staff cars, gun carriages and limbers, ammunition trucks and motorcycles, also anti-aircraft guns and huge searchlights, machine guns, 37 mm. cannons and shoulder rifles. There were foot soldiers, motorized cavalry, tanks, airplanes and motorized units of all kinds. The Second Army had the appearance of an army advancing in real warfare.

Captain Cressey flew the airship over the new gold depository just completed at Fort Knox, into which billions of dollars worth of gold bullion is now being placed for storage under the watchful eyes of the Army.

All small brooks and streams were dry washes, and the Ohio and Wabash Rivers were lower than they had been for years. Despite this dryness, crops appeared to be in fair condition in the basins drained by these two rivers.

Each town or hamlet passed over had the appearance of prosperity if the number of automobiles lining the curbs was any criterion. And the majority of farmyards seemed to be brightened up with a new W.P.A. type of building, all of which were strangely similar in construction.

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Major Wolcott P. Hayes, Air Corps, has been relieved from assignment and duty at Kelly Field, Texas, and assigned to Headquarters, 4th Corps Area, Atlanta, Ga. First Lieut. Burton M. Hovey is assigned to duty at Kelly Field upon the completion of his tour of foreign service.

BOMBING AT SEA BY THE 7TH BOMBARDMENT GROUP

The 7th Bombardment Group, Hamilton Field, Calif., recently conducted a Group interception mission of a ship at sea, the ship intercepted being the U.S. Army Transport MEIGS.

The MEIGS position reports, as well as those of other ships, were plotted from data received over the teletype with the weather reports. From the plottings, the MEIGS plot showed she would be at a good position on the morning of July 17th for an interception problem.

A war condition was assumed, and the MEIGS represented an enemy fleet approaching our shores. The data received was supposedly transmitted by a friendly merchantman, a submarine and an observation airplane.

At 8:30 a.m., July 17th, the Commanding Officer of the 7th Bombardment Group ordered an airplane from the 88th Observation Squadron (LRA) to take off and definitely locate the MEIGS. The airplane from the 88th Squadron represented the whole squadron.

At 9:30 a.m., the Group Commander ordered the Group to take off and intercept the MEIGS. At the time of leaving the Golden Gate, the MEIGS was 186 miles out.

The Group echeloned to the right and left of the navigation airplane and guided on it at all times except when the Navigator was taking a double drift.

THE MEIGS was intercepted an hour and seven minutes after the Group left the Golden Gate. Smoke bombs and an aluminum "slick" were dropped from the Group Commander's airplane about a mile to the rear of the ship, and the rest of the Group used these marks as reference points for bombing. One 100# practice bomb was dropped from each airplane. The Group then returned to Hamilton Field.

Every safety precaution possible was used. All airplanes were carefully checked for life-preservers, water, etc., before the take-off. Three amphibians were to be used for rescue airplanes if need be. One amphibian airplane took off with the Group and flew out one hundred miles on the course followed by the Group. When the message that the MEIGS had been intercepted was received at Hamilton Field, the other two amphibians took off and started on the reciprocal course, followed by the Group on the way home. Position reports were sent back to the plotting room every fifteen minutes by the Group Commander and by the Navigators in the amphibians, times being staggered. These were immediately plotted and consequently, in the event of a forced landing, the distance and course of a rescue airplane from one forced down could be immediately determined. Two airplanes in each squadron were also designated as guard airplanes. These were to circle the airplane forced down to determine if life preservers, etc., were needed and were to act as guides for helping vessels or rescue airplanes.

It is planned for the 7th Bombardment Group to fly one of these interception missions at least once each month.

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FAST NON-STOP FORMATION FLIGHT

In seven hours, five Northrop Attack airplanes from March Field, Calif., completed the trip from their home base to Kelly Field, San Antonio, Texas, after having made what is purported to be the longest military non-stop formation flight on record.

The planes, with Major Louie C. Mallory as leader, started off at 7:00 a.m. and landed at destination at 3:00 p.m. (P.S.T.) According to estimates made at March Field, the average speed for the trip was 143.4 miles per hour.

The flight, which was made on August 21st, was designed to test gasoline and oil consumption in the new Attack planes recently assigned to the 73rd Attack Squadron.

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NEW FRENCH BOMBING AIRPLANE

The latest Bombing airplane built for the French government is the Amiot 144, which is characterized by high power and high precision in bombing; great precision in defensive fire by means of automatic defensive arms; fast performance and a long flight radius.

This airplane is designed to transport from 2,200 to 4,400 lbs. of bombs and to be able to traverse a distance of 2,480 miles at a cruising speed of 186.3 miles per hour. The crew consists of pilot, navigator and bombardier, and two or three machine-gunner observers.

The overall length of the plane is 58.2 feet; total wing span, 76.8 feet; height, landing gear down, 16.3 feet; landing gear up, 15.1 ft.; wing surface, 978 sq. ft.; dead weight, 12,760 lbs.; weight of fuel, from 2,860 to 6,600 lbs.; total weight of plane (normal) 19,800 lbs.; maximum total weight, 25,300 lbs.; maximum speed at 13,120 feet, 241.8 m.p.h.; maximum speed at 19,860 feet, 223 m.p.h.; landing speed, 55.8 m.p.h.; run at take-off, 640 feet; run at landing, 800 feet; time to climb to 13,120 feet, 10 minutes; time to climb to 18,860 feet, 17 minutes; ceiling, 32,800 feet; maximum flight radius, 2,356 miles. This flight performance is calculated on the utilization of two 1200 h.p. engines.

Powered with two 800 h.p. engines, the maximum speed at 13,120 feet is 217 m.p.h.; at 19,860 feet, 201 m.p.h.; run at take off, 800 feet; landing speed and run at landing, same as above; time to climb to 13,120 and 18,860 feet, 13 and 22 minutes, respectively.; ceiling, 27,880 feet, and maximum flight radius, 2,480 miles. By a variation of the curved profile of the wings, the lift coefficient passes from 125 to 170. The landing speed is also reduced by 15.5 m.p.h. The variation of the profile is mechanically affected by the ailerons, which can be deflected downwards some 20 degrees along the whole length of the trailing edge of the wing. These comprise the ailerons used for warping the plane and the special ailerons between them and the fuselage.